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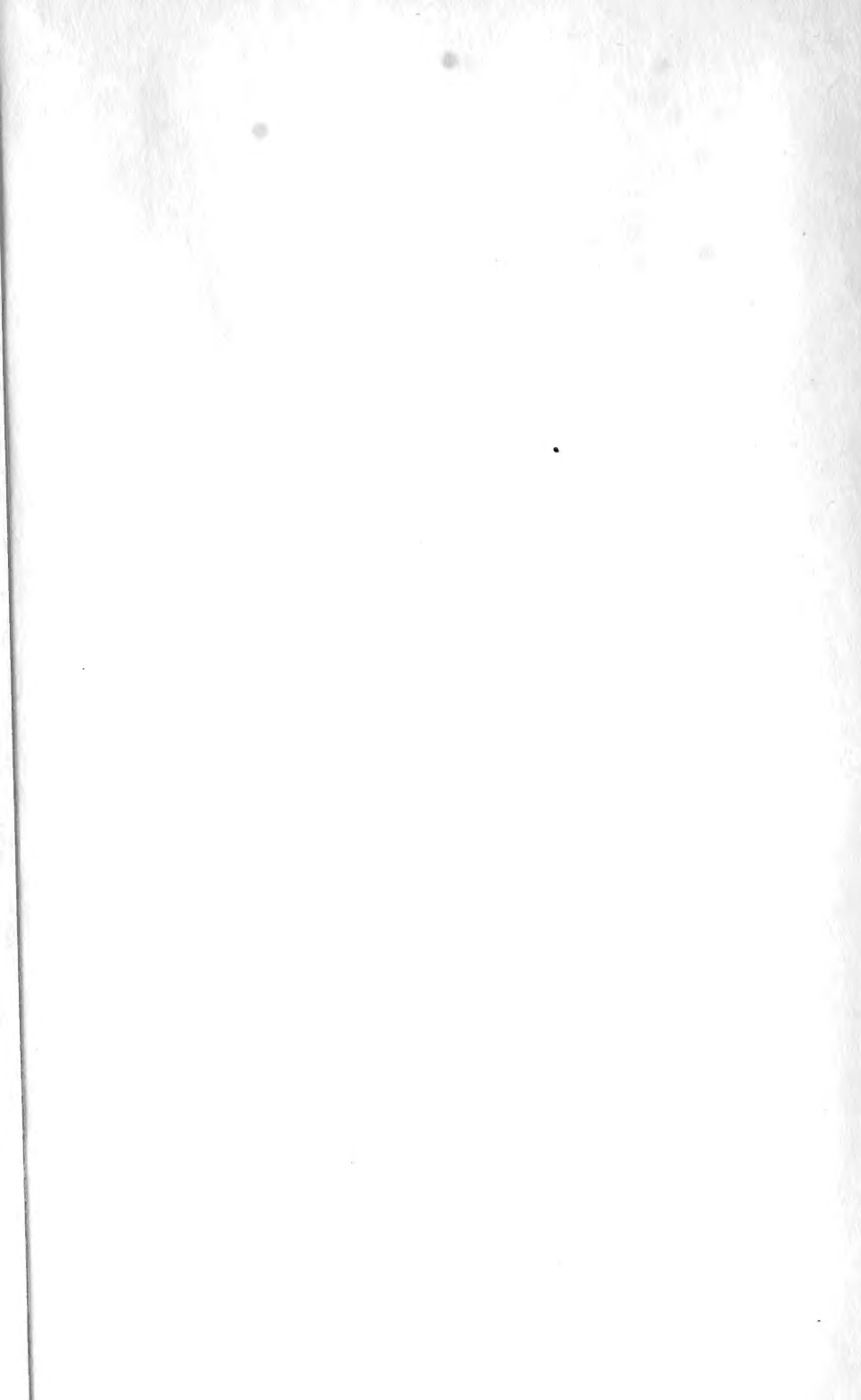
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Number 96

March 25, 1966

COMMENTS ON THE AVIFAUNA OF TANZANIA I

S. DILLON RIPLEY* AND GERD H. HEINRICH†

In 1961-63 Gerd H. Heinrich and his wife, accompanied during the first year by their son Bernd Heinrich, carried out an ornithological expedition through Tanzania. One of the main tasks of this journey was to visit as many of the high mountain cloud-forests of the country as possible in order to obtain comparative series of all species confined to these ecological islands. The collection procured by the expedition contains about 550 species, not all of which will be reported on. The present first report is intended to concentrate on noteworthy field notes as well as new records or systematic comments on the avifauna of Tanzania.

The assistance of Mr. J. D. Macdonald, British Museum (Natural History) and Mr. P. A. Clancey, director of the Durban Museum, who have sent us specimens for comparison and given advice is here gratefully acknowledged.

COLLECTING STATIONS AND CHRONOLOGY

1. *Dar es Salaam*, including *Pugu Hills*—September 17-November 12, 1961.

* Smithsonian Institution, Washington, D.C.

† Dryden, Maine.

2. *Uluguru Mts.*, lowlands around *Morogoro* and cloud-forests, 1500-2000 m—November 22, 1961-February 15, 1962.
3. *Western Usambara Mts.*, near Lushoto, 1700 m—February 16-March 2.
4. *Western Usambara Mts.*, near Shume, 2100 m—March 5-March 22.
5. Near *Muheza* at Zanettiburg, 500 m—March 24-April 1.
6. *Eastern Usambara Mts.* near Amani, 1200 m—April 2-April 21.
7. *Same*, including excursions to the *Pangani River* and to the mountain forests of the *Pare Mts.*—April 25-June 7.
8. *Mt. Meru*, near Usa River, 1500 m—June 10-June 18.
9. *Mt. Meru*, near Momella (eastern slope)—June 19-July 24.
Lake Manyara—July 29-August 6.
Travel to *Dar es Salaam*, shipping of collection, departure of Bernd Heinrich and travel from *Dar es Salaam* to *Southern Highlands*—August 7-August 20.
10. *Iringa* with excursions in all directions—August 20-September 11.
11. *Uzungwa Plateau*, Dabaga Forest, Itanga 30 miles SSE of Iringa—September 12-September 26.
12. *Sao Hill*, south of Iringa, 2200 m—October 3-October 5.
13. *Livingstone Mts.*, Dabaga Forest, 30 miles south of Njombe, 2450 m—October 6-October 23.
14. *Mt. Rungwe*, 2600 m—October 26-November 14.
15. *Ufipa Plateau*, Mbisi Forest, 12 miles NE of Sumbawanga, 2500 m—November 21-December 6.
16. *Abercorn, Northern Rhodesia*—December 8-December 14.
17. *Mbeya*, southern Tanganyika—December 19-December 25.
Chimala—December 27, 1962-January 1963.

ANNOTATED LIST

Falco fasciinucha Reichenow and Neumann.

MATERIAL. Eastern Tanzania, Kingolwira, near Morogoro, 600 m alt (new record)—♀ ad, 4 Feb. 1962; weight: 306 g; wing: 236 mm.

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March 25, 1966 Avifauna of Tanzania I

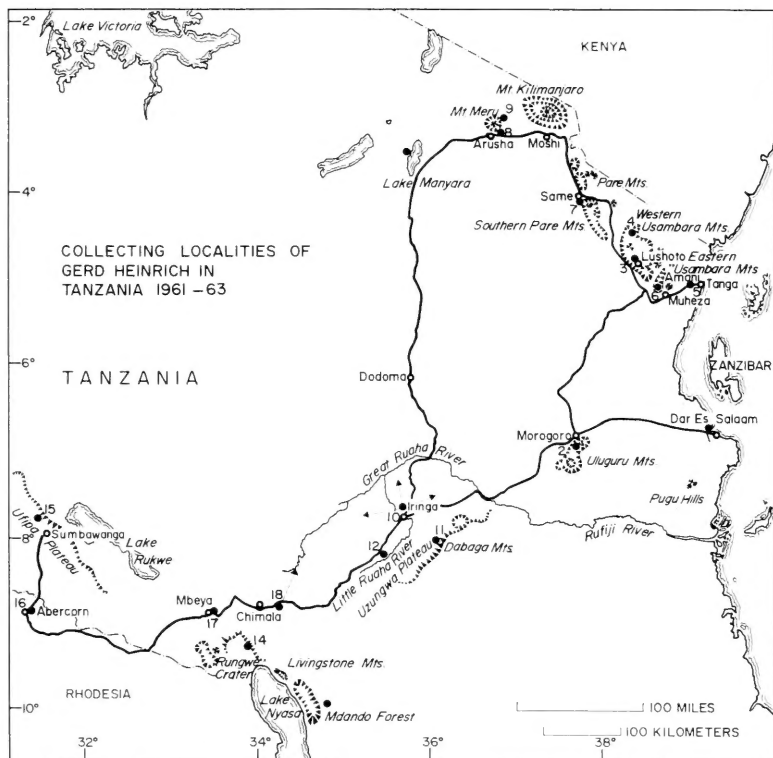
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Præd and Grant give the range of this species as Southern Abyssinia and Kenya. It is also known from Victoria Falls, Northern Rhodesia.

The specimen was collected in open, partially cultivated country, perching on one of the scattered trees feeding on its prey, a *Quelea erythrops*. One of the rarest of birds in museum collections, known only from seven specimens from southern Ethiopia, Kenya, Southern Rhodesia, Nyasaland and now Tanzania. There is a live specimen in captivity at the museum in Livingstone, Northern Rhodesia.



Columba guinea uhehensis Reichenow.

MATERIAL. Southern Tanzania, 20 miles NE of Iringa, 1600 m alt—1 ♂ ad in breeding condition, 2 ♀ ad, 5 Sept. 1962; **weight:** ♂ 314 g, 2 ♀ 326, 354 g; **wing:** ♂ 223 mm, 2 ♀ 215, 225 mm.

According to Peters (1937, vol. 3, p. 64) this subspecies is known only from the Uhehe district of Tanzania. He also lists this subspecies with question mark and as "very doubtfully distinct" and Praed and Grant (1952, vol. 1, p. 490) suppressed it. The series from the type locality at hand was compared with ample series of *guinea guinea* Linné and of *guinea phaeonotus* G. R. Gray. The Iringa birds are easily distinguished from these subspecies. They differ from *guinea* exactly as in the original description by being considerably darker gray on the entire ventral side. From the similarly dark South African subspecies *phaeonotus*, they differ by much lighter lower rump and upper tail coverts, these parts being pale gray, partially with white fringes of feathers, giving the lower rump and upper tail coverts a nearly whitish appearance. The subspecies *uhehensis* thus combines the approximate color of underparts of *phaeonotus* with the approximate color of rump and upper tail coverts of *guinea* and has to be considered as a valid taxon. There are two additional differences from *guinea*: 1) the white on apices of wing coverts, particularly of the lesser and median ones, is more restricted, and, 2) the pale gray on the ends of the pointed neck and breast feathers is also more restricted, giving these parts a predominantly red-brown appearance.

Turturoena delegorguei sharpei Salvadori.

MATERIAL. Eastern Tanzania, Uluguru Mts., 1700 m alt—2 ♂ ad, both in breeding condition, 18 Dec. 1961; *weight*: 167, 184 g; *wing*: 176 mm. Northern Tanzania, West Usambara Mts., near Shume 2100 m alt—3 ♂ ad in breeding condition, 1 ♀ ad with ready egg, March 1962; *weight*: 3 ♂ 136-167 (156) g, ♀ 136 g; *wing*: 3 ♂ 169-177 (173) mm, ♀ 162 mm. Northern Tanzania, East Usambara Mts., 600 m alt—1 ♀ ad, 5 Apr. 1962; *weight*: 158 g; *wing*: 170 mm.

According to Praed and Grant (1952, vol. 1, p. 468), the range of this subspecies in Eastern Africa is southern Sudan to Tanzania (Kilimanjaro and Usambara Mts.), Mt. Cholo and Nyasaland.

Streptopelia decipiens perspicillata (Fischer and Reichenow).

MATERIAL. Northeastern Tanzania, Same, 1000 m alt—1 ♂ ad, 1 ♀ ad, 2 May 1962; *weight*: ♂ 145 g, ♀ 126 g; *wing*: ♂ 154 mm, ♀ 155 mm.

Peters (1937, vol. 3, p. 94) gives the range of this subspecies as "Kenya . . . and Tanganyika . . . (west of the coastal plain and excepting the parts occupied by *S. d. permista*) from Lake Rudolph south to central Tanganyika. . . ."

The two specimens, collected in the semiarid plain west of Same, have pure white under tail coverts, extensive white on belly and white thighs, the characters by which the subspecies *perspicillata* was distinguished in the original description. They differ in this regard rather considerably from the population from southern Tanzania treated below as *permista* Reichenow and also from *griseiventris* Erlanger from northern Somaliland. *Contra* Praed and Grant (1952, vol. 1, p. 473), we believe that these forms should be maintained.

Streptopelia decipiens permista (Reichenow).

MATERIAL. Southern Tanzania, near Chimala (about 58 miles east of Mbeya), 1400 m alt—3 ♀ ad in breeding condition, 12-16 Jan. 1963; *wing*: 155-158 (156) mm.

Peters (1937, vol. 3, p. 94) gives the range of this subspecies as "East Africa, east of the Congo watershed and west of the Rift Valley, northern Uganda and southwestern Ethiopia, south through western Tanganyika . . . to Nyasaland."

The habitat of this form near Chimala is similar to that reported for *perspicillata*. It is also flat, open country with few, scattered trees and much bare ground; but it differs by being more moist, fertile, and extensively cultivated instead of semiarid.

The under tail coverts of these specimens are gray, apically whitish; white on belly much less extensive than in *perspicillata*, restricted to the middle, or wanting; thighs gray. The population from Chimala thus differs distinctly from *perspicillata* of northern Tanzania but resembles fairly closely specimens from Ethiopia. From the latter these birds differ only slightly by a lighter, more grayish-brown, color on the upper parts.

Poicephalus robustus suahelicus Reichenow.

MATERIAL. Eastern Tanzania, foot of Uluguru Mts. near Morogoro, 700 m alt—1 ♂ ad, 1 ♀ ad, 2 ♀ juv; *weight*: ♂ 398 g, ♀ ad 364 g, 2 ♀ juv 317, 320 g; *wing*: ♂ 221 mm, ♀ ad 217 mm, 2

♀ juv 212, 213 mm. Southwestern Tanzania, Ufipa Plateau, 12 miles NE of Sumbawanga, 2500 m alt—1 ♂ ad, 1 ♀ ad, both with gonads slightly enlarged; *weight*: ♂ 401 g, ♀ 309 g; *wing*: ♂ 229 mm, ♀ 207 mm.

Praed and Grant give the range of these specimens as "Angola and Damaraland, Tanganyika . . . to Northern Rhodesia and Mashonaland, Southern Rhodesia." According to their description (1952, vol. 1, p. 542), the forehead is "pale brick red with a silvery wash" and "The sexes are alike." The latter statement seems to be incorrect as the above series of specimens shows a rather pronounced sexual dimorphism. Only in the adult female the forehead (from base of bill to slightly beyond level with eyes) is pinkish-red with a slight silvery wash, whereas the head of the adult male is entirely gray. In immature females the crown, cheeks and sides of the neck are more or less extensively mottled with pinkish- or orange-red. That the forehead is not red in the adult plumage of both sexes is already indicated by the color plate of this species in their plate 35, which shows a specimen with uniformly silvery-gray head—an adult male.

The two birds from Ufipa Plateau differ from the Uluguru population by having the feathers of the crown and nape extensively infused with blackish (in the ♂) or blackish-olive (in the ♀).

Cercococcyx montanus patulus Friedmann.

MATERIAL. Eastern Tanzania, Morogoro District, Uluguru Mts. 1600 m alt—6 ♂ ad in breeding condition, 29 Sept.-17 Dec. 1961, *weight*: 4 ♂ 57-60.5 (59) g; *wing*: 6 ♂ 143-148 (145.3) mm. Southern Tanzania, Uzungwa Plateau, Itanga (30 miles SSE of Iringa), 2100 m alt—1 ♀ ad, 21 Sept. 1962; *weight*: 64 g; *wing*: 149 mm.

The bird calls mostly during the hours before sunrise, between about 3 and 5:30 a.m., and during the day mainly if the weather is foggy and humid. The caller is usually extremely well hidden in the densest, low tangle of the jungle, rarely in the crown of a smaller tree. The two very different calls, described below, are peculiar to this species. By collecting the calling bird, we have shown that both calls were uttered by the male. The most usually heard call is tri-syllabic. Each syllable is sharply separated from the following by indication of an intermission and each syllable is

about a half-tone lower than the preceding. The first syllable and the last are slightly accentuated: "pí-pi-tú." The call is many times repeated, often in a seemingly endless sequence with short intervals. Occasionally a 4th or even a 5th syllable may be added to one call: "pí-pi-tú - - pí-pi-tú - - pí-pi-tú - - pí-pi-pi-tú - - pí-pi-pi-tú" etc. More rarely another, entirely different, call is uttered. It can be approximately circumscribed as follows: "h u í-h ú o - - h u í-h ú o - - h u í-h ú o - -." The "u" of the second syllable is strongly accentuated and sustained. This call may be repeated 20-30 times in one row, while its timbre becomes more and more excited and the sequence more and more rapid until it reaches a screaming quality before the abrupt end.

Centropus senegalensis subspecies?

DESCRIPTION. A population appearing like *flecki* Reichenow, three males in breeding condition collected near Chimala, 58 miles east of Mbeya, southern Tanzania differ from the latter by: 1) deep coal black color of the top of the head and of the nape, the latter showing a distinct metallic-blue gloss, 2) clear white underparts from chin to belly, including sides on neck, only the flanks being tinged with cream, and 3) the mantle and wings being bright cinnamon-rufous. These birds measure: wing 161-168 (165.5) mm.

COMMENT. West of Chimala the brachystegia-type of woods of the northern slopes of the Kipengere Range extends to the north, beyond the Chimala-Mbeya road, for some miles into the Buhoro Flats of the Upper Ruaha-basin. Where the open flats meet the northern border of these woods, this species lives side by side with *Centropus superciliosus* Hemp. and Ehr. There is, however, a clear, ecological differentiation between the two. While *superciliosus* inhabits mainly the scattered complexes of dense, low scrub and stands of cane, particularly on the flats and along the shores of small rivers, occasionally visiting one of the isolated, low acacia trees, *senegalensis* on the contrary is found only along the borders of the dry forest belt and its refuge is invariably in the crowns of trees. Even specimens found hunting in lower bushes do not dive for cover into the dense ground vegetation to hide as *superciliosus* would do, but instead fly into the crowns of the taller trees as

soon as disturbed. They are extremely shy and difficult to approach, also differing in this regard considerably from *superciliosus*. During January the birds were in breeding condition and were seen only in couples, the two mates keeping always closely together, even when pursued for a long distance. One male from central Northern Rhodesia (Mulyashi) in the collection of the Smithsonian Institution agrees in color with these birds, while another adult male and an adult female from Northern Rhodesia agree with the original description of *flecki* Reichenow. These facts suggest two entirely different possible explanations: either these birds represent a new subspecies which meets the more southern subspecies *flecki* in central Northern Rhodesia, where both forms may perhaps intergrade, or else our Chimala birds are not a subspecies at all but merely the so far undescribed "basic plumage" (see Lawson, 1962) of the subspecies *flecki*. This basic plumage may not develop in all specimens as in *Centropus superciliosus burchellii* Swainson. This problem still needs thorough investigation. Meanwhile we believe that two discrete populations are involved.

Lybius leucocephalus albicauda (Shelley).

MATERIAL. Northern Tanzania, western side of Lake Man-
yara—5 ♂ ad, 1 ♀ ad, beginning of August 1962; weight: 4 ♂ 74-81 (74.6) g, ♀ 76 g; wing: 5 ♂ 94-98 (96.5) mm, ♀ 97 mm. Northern Tanzania, east of Mt. Meru (near Sanya Yuu and Momella)—1 ♂ ad, 1 ♀ ad; weight: ♂ 78.5 g, ♀ 73 g; wing: ♂ 98 mm, ♀ 95 mm.

Praed and Grant (1952, vol. 1, p. 706) give the range of this species as "Southern Kenya . . . to northern Tanganyika . . . from south-west Lake Victoria and Rusinga and Ukerewe Islands to Mbulu, Lolkissale and the Dodoma District."

Like *Lybius torquatus* Dumont this species occasionally utters a social, antiphonal song during which 4-6 birds may gather in the crown of a tall tree. In contrast to the clear, ringing call of *torquatus* the voice of *leucocephalus* is extremely unmelodic, coarse and rasping. Heard from some distance, the call sounds like: "Krá Kre . . . Krá Kre . . . Krá Kre . . ." usually 4-8 times repeated in fairly fast sequence; the first of the two syllables of each "call" is accentuated and somewhat higher than the second. It is assumed that the two syllables are alternately uttered by the two partners of the duetting.

From the open bush and savannah-wood country in hilly situations between 1000 and 1700 m alt, which is their habitat, these birds like to visit adjacent plantations to feed on ripening papaya fruits.

Lybius leucocephalus lynesii Praed and Grant.

MATERIAL. Southern Tanzania, Iringa—3 ♂ ad, 5 ♀ ad; *weight*: 3 ♂ 70-81 (71.7) g, 5 ♀ 64-71 (67.2) g; *wing*: 3 ♂ 95-98 (96) mm, 5 ♀ 95-97 (95.4) mm.

Praed and Grant (1952, vol. 1, p. 707) give the range of this subspecies in Tanzania as Dodoma Province and Iringa District.

There is an amazing variability in the extent and distribution of the black color on the tail. In fact no two specimens are exactly alike. One specimen is predominantly white with only narrow black bases. Another has the tail almost entirely black. In others the median pair, or two pairs, of rectrices are entirely white, while all others are more or less extensively black, or, on the contrary, the outer rectrices are white and the inner pairs are partially black. Sometimes the black extends further on one, either the inner or outer, web of a feather toward its white apex than on the other.

Lybius leucocephalus parensis new subspecies.

TYPE. ♂ ad (YPM no. 84275), Collector's no. 33906, collected by Gerd Heinrich, 25 May 1962, northeastern Tanzania, northeastern slopes of Paré Mts., near Same.

DESCRIPTION. Agrees with subspecies *senex* Reichenow from the central districts of Kenya Colony and country east of Mt. Kenya in the lack of white markings on wing coverts, but differs by having the belly and flanks gray, suffused with whitish. The underside thus is similar to subspecies *albicauda* Shelley of southern Kenya Colony and northern districts of Tanzania except flanks and belly are, in the type, distinctly lighter than in the latter subspecies. Differs in addition rather strongly from *albicauda* by the lack of white markings on wing coverts. *Weight*: 1 ♂ ad 72 g. *Wing*: 1 ♂ ad 90 mm.

Indicator variegatus virescens Reichenow.

MATERIAL. Northeastern Tanzania, East Usambara Mts., 1100 m alt—1 ♂, 20 April 1962; *weight*: 53 g; *wing*: 102 mm. Northern Tanzania, Paré Mts., Chome, 1800 m alt—1 ♀, 30 May 1962; *weight*: 48.5 g; *wing*: 101 mm.

Friedmann (1955) gives the range of this subspecies as southern Somaliland, to Coastal Kenya, northeastern Tanzania (Kilimanjaro area, Usambara Mts., Useguha, Uvidunda Mts., Lindi?).

The two specimens were collected near to or at the edge of the high mountain cloudforest. Their wing measurements are barely different from *variegatus variegatus* Lesson. But their color differs distinctly from West African birds (Angola), the underside being darker throughout, with white on the abdomen much more restricted.

Prodotiscus zambesiae ellenbecki Erlanger.

MATERIAL. Northeast Tanzania, East Usambara Mts., near Amani, 1150 m alt—1 ♀ juv, 6 April 1962; *weight*: 10 g; *wing*: 66 mm.

Friedmann (1955) gives the range of this species as southern Ethiopia, Kenya east of the Rift Valley and northeastern Tanzania (the Kilimanjaro region and the Usambara Mts.).

The weight and measurement of wing of this juvenal specimen are under the minimum recorded by Friedmann loc. cit.

Alcippe abyssinica abyssinica (Rüppell).

MATERIAL. Northeastern Tanzania, Mt. Meru, 1800 m alt—1 ♂ ad, 3 ♀ ad, 21-24 July 1962; *weight*: ♂ 19 g, 3 ♀ 18.5-20 (18.7) g; *wing*: ♂ 64 mm, 3 ♀ 63-65 (63.7) mm. Northeastern Tanzania, West Usambara Mts. near Lushoto, 1700 m alt—3 ♂ ad, 1 ♀ ad, 2 ♂ juv, all but one adult in breeding condition, 20-27 Feb. 1962; *weight*: 3 ♂ ad 16.5-19 (17.8) g, ♀ 21 g, 2 ♂ juv 17.5, 19 g; *wing*: 3 ♂ ad 64-65 (64.7) mm, ♀ 63 mm, 2 ♂ juv 63, 65 mm.

Peters (1964, vol. 10, p. 412) gives the range of this species as "Highlands of northeastern Tanganyika, western Kenya, and western Ethiopia."

Alcippe abyssinica stierlingi (Reichenow).

MATERIAL. Eastern Tanzania, Uluguru Mts., 1600 m alt—4 ♂ ad, 2 ♀ ad, all in breeding condition, 29 Nov.-12 Dec. 1961; *weight*: 1 ♂ 21 g, 1 ♀ 20 g; *wing*: 4 ♂ 62-67 (64.7) mm, 2 ♀ 63, 64 mm. Southern central Tanzania, Uzungwa Plateau, 30 miles SSE of Iringa, Itanga, 2100 m alt—3 ♂ ad, 4 ♀ ad, gonads of all moderately enlarged, 12-25 Sept. 1962; *weight*: 3 ♂ 17-19.5 (18.1) g, 4 ♀ 16-17 (16.7) g; *wing*: 3 ♂ 63-66 (64.7) mm, 4 ♀ 62-63 (62.7) mm. Southwestern Tanzania, Livingstone Mts. 30 miles South of Njombe, Mdando Forest 2450 m alt—3 ♂ ad, 3 ♀ ad, all in full breeding condition, 8-14 Oct. 1962; *weight*: 3 ♂ 17-19.5 (18.5) g, 3 ♀ 18.5-21 (19) g; *wing*: 3 ♂ 64-65 (64.2) mm, 3 ♀ 63-67 (65) mm. Southwestern Tanzania, Mt. Rungwe, 2600 m alt—4 ♂ ad, 3 ♀ ad, all in full breeding condition, 27 Oct.-11 Nov. 1962; *weight*: 4 ♂ 18.5-20.5 (19.4) g, 3 ♀ 19.5-21 (20) g; *wing*: 4 ♂ 64-67 (64.5) mm, 3 ♀ 65-66 (65.3) mm.

The range of this subspecies (Peters 1964, vol. 10, p. 412) is "Highlands of northern Nyasaland and southwestern and central Tanganyikae."

Alcippe abyssinica hildegardae new subspecies.

TYPE. ♂ ad (YPM no. 84280), Collector's no. 35890, collected by Gerd Heinrich, 27 Nov. 1962, Ufipa Plateau, 12 miles NE of Sumbawanga, southwestern Tanzania.

DESCRIPTION. Similar to *abyssinica abyssinica* (Rüppell) in the lack of black streaks on throat, breast and forehead. Differs from that subspecies distinctly and constantly by slightly paler mantle, rump and upper tail coverts, by considerably paler gray dorsal side of head and neck and by longer wing. *Weight*: 2 ♂ 21 g, 6 ♀ 20-22 (21.1) g. *Wing*: 2 ♂ 67, 70 mm, 6 ♀ 69-71 (70.3) mm.

MATERIAL. 2 ♂ ad, 6 ♀ ad, all in full breeding condition. All from type locality.

Pycnonotus latirostris australis (Moreau).

MATERIAL. Southwestern Tanzania, Ufipa Plateau—4 ♂ ad, 5 ♀ ad (gonads of all moderately enlarged), all from type locality;

weight: 4 ♂ 23.5-35.5 (31.1) g, 4 ♀ 28.5-32 (30.1) g; wing: 4 ♂ 84-90 (88.5) mm, 5 ♀ 82-85 (83.7) mm.

The Mbisi Forest differs rather strongly from all other high mountain forests of Tanzania. It is mainly characterized by the prevalence of a giant Euphorbia (? *Euphorbia obovalifolia* A. Rich.) with trunks measuring about $\frac{3}{4}$ meter in diameter and with their chandeliers towering perhaps up to 36 meters above the ground. As these plants provide little shadow and as other tall trees with dense foliage are fairly scarce, the growth of low bushes was not hampered by lack of light and has produced a thicket of extraordinary density. Although these thickets may be the proper home of this form, the birds are not at all strongly attached to them. In this regard, as in their altitudinal preference and also in their general behavior, they differ strikingly from the West African *latirostris latirostris* (Strickland). The latter are extremely shy and elusive birds which remain always well hidden under the cover of dense, liana-tangled, lower vegetation of tropical lowland jungles, one of the most elusive and rarely seen of the greenbuls. In strong contrast *australis* spends most of the time in the crowns of medium-sized trees, moving around freely and evidently without much fear and ascending occasionally even to the tall chandeliers of the huge euphorbias.

The most characteristic voice is a sound like "zik", repeated a number of times in rapid sequence: "zik zik zik zik - zik zik." It is so similar to the call of the Nectarine *Chalcomitra senegalensis* that it can easily be mistaken for it. Another sound, probably the call-note, can be circumscribed as "tjeúrr tjeúrr", monosyllabic, uttered once or a few times with fairly long intervals.

In Peters' (vol. 9, p. 256, 1960) *australis* (Moreau) and *pallidus* Mearns are treated as synonyms of *saturatus*. Our 9 topotypes of *australis* were compared with the two types of Mearns. It is at once apparent that *australis* is dorsally, including the tail, considerably and constantly paler than both types. This difference is so striking that the form *australis* must be maintained. Praed and Grant have synonymized *australis* with *eugenius* ranging from Bukoba to Kungwe Mahare Mts., that is in a middle zone between the localities of *australis* and *saturatus*. Unfortunately, we have not compared our series of *australis* with birds from Bukoba and Kungwe Mahare, so that the relation of *australis* to *eugenius* is still

problematical. At present we follow Peters' *Check-List*, keeping *australis* separate from *eugenius*.

It may be mentioned that the Angolan populations of *latirostris latirostris* differ strikingly from *latirostris australis* by the color of the feet, which is light yellow in the former, olive-brown in the latter. Perhaps the foot color can help to unravel the complex taxonomy of this group of forms. It seems possible that two sibling species are involved—one a high mountain bird, the other an inhabitant of lowland jungle, the two being similar in color of plumage but different in ecology, behavior, voice and color of feet.

Phyllastrephus fischeri fischeri? (Reichenow)

MATERIAL. Northeastern Tanzania and East Usambara Mts., near Lunguza, 300-600 m alt—1 ♂ ad, 1 ♀ ad, both in breeding condition, 3 ♂ juv, 1 ♀ juv, 15-18 Apr. 1962; *weight*: ♂ ad 38 g, ♀ ad 30 g, 3 ♂ juv 33.5-34 (33.8) g, ♀ juv 25 g; *wing*: ♂ ad 84 mm, ♀ ad 80.5 mm, 3 ♂ juv 82-87 (84.7) mm, ♀ juv 78 mm. Eastern Tanzania, Pugu Hills, south of Dar es Salaam, 200 m alt—1 ♂ ad, 1 ♀ ad; *wing*: ♂ 85 mm, ♀ 80 mm. *culmen*: (measured from base of nostril to tip) 5 ♂ (2 ad + 3 juv) 15-15.5 (15.2) mm, 3 ♀ (2 ad + 1 juv) 13.5-14 (13.7) mm.

Peters (1960, vol. 9, p. 270) gives the range of this form as "The lowland forests of the coastal belt of East Africa from just north of the Tana River to Portuguese East Africa (Netia)."

This form inhabits evergreen, dense and tangled, tropical jungles, only at low altitudes, seemingly up to 600 m alt at the most. In the West Usambaras this form and *placidus* (Shelley), at the first glance, seem to be sympatric. In fact they are ecologically most sharply separated from each other, *fischeri* being confined to the damp lowland jungle at the foot of the mountain, with its densest population at about 300 m alt (stray specimens occasionally coming up to about 600 m), *placidus* inhabiting the cool high mountain cloud-forests above 1000 m alt; *fischeri* thus does not replace *placidus* geographically, but it is separated from the latter ecologically. The only reason that *fischeri* does not penetrate farther westward into the territory of *placidus* is evidently the fact that there are almost no tropical lowland jungles in existence between the East Usambaras and the western districts of Tanzania.

All *Phyllastrephus* calls are too complicated for phonetic cir-

cumscribing, but in the field this species is at once distinguishable from *placidus* by its harsher timbre.

In color of plumage *fischeri* and *placidus* are deceivingly similar. But even here however the difference in the shades of the dorsal side is distinct and constant: olive-brown in the former, dark olive-green in the latter. There are some other differential characters which have eluded description based on skins; 1) iris in adults of *fischeri* paler than in *placidus*, whitish or yellowish-white, compared with gray or grayish-brown in *placidus*, and 2) legs plainly gray in *fischeri*, light bluish-gray in *placidus*. In addition, there is a rather tangible difference between the two forms in the structure of the bill, which is distinctly longer in *fischeri* than in *placidus* (see measurement of culmen above), the profile of the culmen being almost straight from base to tip in *fischeri*, slightly and gradually curved in *placidus*. The structure of the bill of *fischeri* thus approaches *madagascariensis* Gmelin rather than *placidus*, although in the former the bill is considerably longer.

The forms *fischeri* (Reichenow) and *placidus* (Shelley) are ecologically specialized and so sharply differentiated that they can exist side by side without geographical separation or dividing barrier. They should therefore be regarded as distinct species rather than as associated subspecies of the same species. This hypothesis is additionally supported by the difference in the bills. In consequence of this change, *placidus* will be tentatively treated below as a subspecies of *cabanisi* (Sharpe).

Phyllastrephus cabanisi placidus (Shelley).

MATERIAL. Northern Tanzania: Mt. Meru, 1500-1800 m alt—4 ♂ ad, 3 ♀ ad (3 specimens nearly in breeding condition), 11-21 June 1962; weight: 4 ♂ 30.5-32 (31.5) g, 3 ♀ 27-31 (28.7) g; wing: 4 ♂ 86-90 (88) mm, 3 ♀ 77-81 (79) mm. Northern Tanzania: West Usambara Mts., 1700-2100 m alt—5 ♂ ad, 4 ♀ ad (gonads of 2 specimens slightly enlarged), 1 ♂ juv, 18. Feb.-11 March 1962; weight: 5 ♂ ad 21-29 (26) g, 4 ♀ 19-25 (21.7) g; wing: 5 ♂ ad 78-85 (82) mm, 4 ♀ 75-80 (77.1) mm. Northern Tanzania: Paré Mts., near Chome, 1800 m alt—1 ♀ ad, 1 June 1962; weight: 27 g; wing: 77 mm. Northern Tanzania: East Usambara Mts., near Amani, 1150 m alt—3 ♂ ad, 2 ♀ ad, 2 ♀ juv; weight: 3 ♂ 26-30 (26.8) g, 2 ♀ ad 22, 25 g, 2 ♀ juv 25, 26 g; wing: 3 ♂

80-84 (81.5) mm, 2 ♀ ad 75, 76 mm, 2 ♀ juv 72, 75 mm. Eastern Tanzania: Uluguru Mts., 1600 m alt—2 ♂ ad, 4 ♀ ad (one with ready egg), most specimens in breeding condition, 30 Nov.-2 Dec. 1961; *weight*: 2 ♀ 25, 25.5 g; *wing*: 2 ♂ 80-85 mm, 4 ♀ 76-78 (77) mm. Southern Tanzania, Uzungwa Plateau, near Itanga, 30 miles SSE of Iringa, 2000-2100 m alt—3 ♂ ad, 3 ♀ ad, gonads of some specimens moderately enlarged, Sept. 1962. Southern Tanzania, near Mbeya, 2600 m alt—1 ♂ ad, 1 ♀ ad, 20 Dec. 1962. Southern Tanzania, Livingstone Mts., Mdando Forest, 30 miles south of Mdando, 2450 m alt—4 ♂ ad (2 specimens in breeding condition), 2 ♀ ad (one in breeding condition), 10-15 Oct. 1962; *weight*: 4 ♂ 24-28.5 (26.1) g, 2 ♀ 22, 25 g; *wing*: 3 ♂ 80-81 (80.5) mm, 2 ♀ 71-75 (73.3) mm. Southern Tanzania, Mt. Rungwe, 2600 m alt—1 ♂ ad, in breeding condition, 3 ♀ ad (one in breeding condition), 28 Oct.-2 Nov. 1962; *weight*: 1 ♂ 30 g, 3 ♀ 20-23.5 (22.2) g; *wing*: 1 ♂ 85 mm.

Peters (1960, vol. IX, p. 270) gives the range of this subspecies as "The highlands of Kenya . . . east of the great Rift Valley from Marsabit, Mt. Kenya and Chyulu Hills south through Tanganyika . . . Highlands (Kilimanjaro, Usambara, Nguru, Uluguru, etc.) to Portuguese East Africa (Mt. Namuli) and southern Nyasaland (Malanje)."

The weights and wing measurements of the 36 specimens listed above separately for 6 high mountain ranges of Tanzania show that there is little difference in weight between the sexes, while the length of wings of females is constantly 4-9 mm shorter than of males. There is no tangible difference in weights and wings between all listed populations except Mt. Meru, where both sexes are slightly longer winged than the rest. All populations agree exactly in color.

Almost all specimens listed are lighter in weight than *Phyllastrephus fischeri* (Reichenow), while the wing length shows no tangible difference between these two species.

Phyllastrephus orostruthus amani Sclater and Moreau.

MATERIAL. Amani Forest, Usambara Mts., only—1 ♂ ad, 1 ♂ juv, type locality, April, 195; *weight*: ♂ ad 36.5 g, ♂ juv 31 g; *wing*: ♂ ad 88 mm, ♂ juv 85 mm.

These two specimens were collected at about 1200 m alt in

thick ground vegetation of mountain cloud-forest bordering an old, densely overgrown clearing.

Both specimens are in fresh plumage. In the older specimen the lower belly is slightly orange tinged, in the younger one, pale yellowish. The iris is brown in both, the feet are pale lilac-gray and the bill is black with whitish latero-basal line on lower mandible.

Erythropygia quadrivirgata quadrivirgata (Reichenow).

MATERIAL. Eastern Tanzania, 15 miles west of Dar es Salaam and Pugu Hills—3 ♂ ad, gonads slightly enlarged, Sept. and Oct. 1961; wing: 79-84 (82.3) mm. Eastern Tanzania, Uluguru Mts. near Morogoro, 700-800 m alt—1 ♂ ad, gonads slightly enlarged, 1 ♀ ad, Dec. 1961 and Jan. 1962; weight: ♂ 25 g, ♀ 24 g; wing: ♂ 83 mm, ♀ 72 mm.

Ripley (in Peters' *Check-List of Birds* 1964, vol. 10, p. 25) gives the range of this subspecies as the coastal districts of Kenya and Tanzania, south to Mozambique just north of Delagoa Bay and extending up to the Zambesi River, Southern Rhodesia, in eastern Mashonaland, south to Nuanetsi and northern and eastern Transvaal.

Erythropygia quadrivirgata brunnea new subspecies.

TYPE. ♂ ad (YPM no. 84276), Collector's no. 34821, collected by Gerd Heinrich, 4 Aug. 1962, northern central Tanzania, west of Lake Manyara in the Rift Valley.

DESCRIPTION. Differs from the nominate race rather strikingly by the much darker and richer olive-brown color on top of head, neck and mantle; also chest and flanks much richer ochraceous than in *quadrivirgata* (Reichenow) and about the same color as *wilsoni* Roberts. More similar to the latter subspecies than to any other named race, but top of head, neck and mantle distinctly darker and more olive-brown. Weight: 1 ♂ ad 28 g, 1 ♀ ad 26.5 g. Wing: 1 ♂ ad 83 mm, 1 ♀ ad 79 mm.

MATERIAL. 1 ♂ ad, 1 ♀ ad, not in breeding condition: Both from type locality.

REMARK. The type specimens were compared with two specimens (♂ ♀) of *wilsoni* from Zululand in the Durban Museum.

Erythropygia brunneiceps Reichenow.

MATERIAL. Northern Tanzania, Mt. Meru, northern and north-eastern foot, also near Engare Nanyuki and at the Longido steppe—6 ♂ ad, 1 ♀ ad; weight: 6 ♂ 23-25.5 (24.2) g. ♀ 21 g; wing: 6 ♂ 72-78 (74.7) mm, ♀ 70 mm.

Ripley (in Peters' 1964, vol. 10, p. 20) gives the range of this species as "Central Kenya and Tanganyika, from Kidong Valley to Ukamba, south to Manyara, Uaso Nyiro and Mt. Kilimanjaro. . . ."

This species is an inhabitant of semiarid, open, poorly wooded areas in altitudes between 1500 and 1800 m, where it keeps to small groups of bushes, widely scattered between single trees. It is much less shy and elusive than *leucophrys zambeziana*, and distinctly less agil and more conspicuous. The singing male can easily be approached and observed. Its song is similar to *leucophrys zambeziana*, but of a distinctly different quality, less monotonous, more variegated and as a whole more pleasant to the human ear.

It was assumed that this form replaces *leucophrys zambeziana* geographically in the area from central Kenya "south to Manyara and Mt. Kilimanjaro." Heinrich found typical *leucophrys zambeziana* at Lake Manyara as well as at Mt. Meru, at the latter locality in close neighborhood with *brunneiceps*, but ecologically distinctly separated from the latter.

Praed and Grant (1955, vol. 2, p. 316) have distinguished *brunneiceps* from *leucophrys zambeziana* only by the darker and browner head and mantle and by the white edges to inner secondaries. There are a number of other differences, some of which have perhaps major importance for the judgment of the taxonomic status of *brunneiceps*, as they distinguish the latter not only from one but from all subspecies of *leucophrys*; 1) iris black-brown (instead of brownish-gray), 2) legs slate gray (instead of pale, almost whitish or ivory), 3) under mandible black, with only the base of ventral side narrowly pale (instead of yellowish with black apex), 4) size, length of wing and weight considerably larger, 5) bill distinctly longer, and 6) basic color of chest and breast pure white (instead of slightly tawny tinged), with wider, longitudinal streaks.

The strong morphological differentiation of *brunneiceps* from all subspecies of *leucophrys* inhabiting the Africa continent from

coast to coast, the sympatric occurrence of both forms, at least in the southern part of the range of the former, although ecologically separated, and the differences in voice and behavior—all suggest that *brunneiceps* should be regarded as a distinct species rather than as a subspecies of *leucophrys*. The reported hybridization of both forms at Simba (van Someren, 1922) seems doubtful and needs confirmation based on careful research.. The apparently vicarious distribution of the two forms may be deceiving, as it has been in other cases where the two geographical areas involved are fundamentally different in ecology.

Pogonocichla stellata orientalis (Reichenow and Fischer).

MATERIAL. Northwestern Tanzania, West Usambara Mts., 1700-2100 m alt—4 ♂ ad, 3 ♀ ad (2 ad in breeding condition), 1 ♀ nestling, 20 Feb.-5 March 1962; *weight*: 4 ♂ 15.5-20 (17.5) g, 3 ♀ ad 15-19.5 (16.8) g; *wing*: 4 ♂ 76-84 (80.2) mm, 3 ♀ ad 72-75 (73) mm. Northeastern Tanzania, East Usambara Mts., 1200 m alt—1 ♂ (spangled plumage), 16 Apr. 1962. Eastern Tanzania, Uluguru Mts., 1500-1700 m alt—4 ♂ ad, 2 ♀ ad, all in breeding condition, 2 ♂ subadult (olive plumage), end of Nov. 1961; *weight*: 3 ♂ ad 18-19 (18.5) g, 1 ♀ 19 g; *wing*: 4 ♂ ad 80-81 (80.2) mm, 2 ♀ 72-73 mm. Southern Tanzania, Uzungwa Plateau, 30 miles SSE of Iringa, 2100 m alt—6 ♂ ad, 1 ♂ (olive plumage), 13-23 Sept. 1962; *weight*: 6 ♂ ad 16-19 (17.2) g; *wing*: 6 ♂ ad 77-82 (79.2) mm. Southern Tanzania, Livingstone Mts., Mdando Forest, 30 miles south of Njombe, 2450 m alt—3 ♂ ad, 1 ♀ ad, 1 ♂ (olive plumage), 7-10 Oct. 1962; *weight*: 3 ♂ ad 16.5-18.5 (17.3) g, ♀ 18 g; *wing*: 3 ♂ ad 78-82 (80) mm, ♀ 76 mm. Southern Tanzania, Rungwe Crater, 2600 m alt—1 ♂ ad, in breeding condition, 1 nestling, 28 Oct. and 5 Nov. 1962; *weight*: ♂ ad 20 g; *wing*: ♂ ad 78 mm. Southeastern Tanzania, Ufipa Plateau, 12 miles NE of Subawanga, 2500 m alt—2 ♂ ad, 1 ♀ ad, all in breeding condition, end of Nov. 1962; *weight*: 2 ♂ 19-19.5 g, ♀ 20 g; *wing*: 2 ♂ 83, 84 mm, ♀ 74 mm.

Moreau (1951) gives the range of this species as northeastern Tanzania (Usambara and Uluguru Mts.) south to Mozambique (Unangu and Namuli Mts.), east to eastern side of Lake Tanganyika (Kungwe Mahare Mts. and Ufipa Plateau) and southeast to the mountains north, east and west of Lake Nyasa.

In Tanzania the habitat of this species is dense thickets of bushes and small trees forming the ground floor in mountain cloud-forests. It is however a somewhat tolerant species and may be found in related but varied habitats. In the extreme western part of the West Usambara Mts., where extended, dry open cedar forests replace the dense, tropical cloud-forests, *Pogonocichla* is common. Here it inhabits small, scattered islands of bush complexes within the cedar forests. On Mt. Rungwe it was found to be common in the zone of low, extremely dense bushes, giant heather and dwarfed trees at the border of the timber line, 2800 m alt. The species was never found below 1500 m alt. In the Pugu Hills, a small, hilly relict tropical jungle in the coastal lowlands south of Dar es Salaam, Gerd and Bernd Heinrich tried in vain to confirm the record of this species given by Moreau (1951).

The breeding season evidently coincides with the rainy season. The gonads of all birds collected during November (in different localities and different years) and of a few specimens out of the series collected during February 1962 in the West Usambaras were in breeding condition, but not a single specimen in breeding condition was collected during the dry season. In the Uluguru Mts. Bernd Heinrich found two nests, 12 and 17 Dec. 1961. Both were semi-domed, hidden on the ground of the rain forest between low vegetation; each contained 2 eggs of bluish-white color with fine punctation. A nestling, still unable to fly, was found on Mt. Rungwe 4 November 1962.

Among the thrushes of the dense lower floor of the cloud-forests this one is, although usually well hidden in the thicket, comparatively least shy and elusive. Occasionally it even appears in the crowns of tall trees. Like all mountain thrushes it likes to feed on the columns of driver ants.

The voice of this species most often heard is a melodic two-syllabic whistle with the second syllable accentuated and about five tones higher than the first: "fuhít . . . fuhít . . . fuhít . . .". This two-syllabic call is several times repeated in slower or faster succession. It seems to be the alarm note which, in rising excitement, is occasionally completed by interludes of rapid sequences of a sound very similar to the alarm note of the European robin (*Erithacus*): "tsík tsík tsík, tsík." A singing male was only once observed high up in the dense crown of a cedar tree, about 30

meters above the ground; the song had a soft and very pleasant timbre and was continuously repeated while the bird from time to time changed its perch; the stanza was composed of three two-syllabic notes, with the accent always on the second syllable, which was about equally low in the first and third, much higher in the second note: "t j e r ú - - t j e r í - - t j e r ú." The singer was in adult plumage but not in breeding condition and the time was September. This thus may have been a subsong.

Pogonochichla stellata keniensis Mearns.

MATERIAL. Northern Tanzania, Mt. Meru, eastern slopes (near Momella), 1800 m alt—2 ♂ ad, 4 ♀ ad, 1 ♂ partially in nestling, partially in subad (olive) plumage, 16-25 June 1962; *weight*: 2 ♂ ad 18.5, 20 g, 4 ♀ 16-19.5 (17.6) g, ♂ subad 19 g; *wing*: 2 ♂ ad 78, 80 mm, 4 ♀ 73-75 (74) mm.

Moreau (1951) gives the range of this subspecies as the highlands of Kenya, both sides of the Rift, but excluding Elgon, Marsabit, Taita and the Chyulu range; in northern Tanzania the mountain masses of Loliondo, Oldeani, Ketumbeine, Essimigor, Mondul and Longido. *Contra* Moreau *loc. cit.* the population of Mt. Meru is included in this subspecies rather than *guttifer* (Reichenow and Neumann).

This series of specimens from Mt. Meru was compared with a series of birds from Mt. Kilimanjaro and a series from Mt. Kenya. It was found that all specimens from Kilimanjaro were dorsally distinctly darker than the birds of the two other populations, the color of the back being deeper, almost brownish-olive in Kilimanjaro birds, rich olive-green in specimens from Mt. Kenya and almost the same in the Meru birds. The subspecies *keniensis* Mearns is therefore maintained in accordance with Moreau's review (1951), but *contra* Moreau, Mt. Meru has been included in the range of that subspecies. The name *guttifer* (Reichenow and Neumann) thus would be restricted to the Kilimanjaro population.

Erithacus montanus montanus (Reichenow) new combination.

MATERIAL. West Usambara Mts., near Shume, 2100 m alt—4 ♂ ad, 2 ♀ ad, 2 ♂ juv, 18-22 March 1962; *weight*: 4 ♂ ad 23-26

(24.2) g, 2 ♀ 22-22.5 (22.3) g, 2 ♂ juv 22.5-23 (22.8) g; wing: 4 ♂ ad 76-77 (76.5) mm, 2 ♀ 71.5-72 (71.8) mm, 2 ♂ juv 73.5-76 (74.8) mm.

The range of this subspecies is the Usambara Mts. only. They are silent, unobtrusive birds, living in the shaded, lower vegetation of tall mountain cloud-forest, not so strictly attached to the ground and its plant cover as, for example, *Sathrocercus* or *Alethe fülleborni*, often seen less than a meter above the ground and once even more than 2 meters high in the crown of a small tree. They are not particularly shy, nevertheless they are not easily observed. The warning call is not loud, composed of one syllable repeated in very fast sequence and representing a rather soft rattle, approximately as follows: "tjrétjrétjrétjrétjré." They like to feed on driver ants, as all African mountain thrushes do, and will appear together with *Pogonocichla*, *Alethe fülleborni*, *Turdus olivaceus* and others to collect their favored prey whenever the "sijapus" march through the birds' habitat. Nevertheless I think one could not consider this species as "generally associated with ants."

The juvenal plumage is so far unrecorded. In general appearance it is similar to the juvenal plumage of *Pogonocichla*. Blackish above, including head densely spotted with pale, yellowish-tawny, lateral feathers of mantle olivaceous; and below paler yellowish-tawny than above, chest strongly, flanks more weakly mottled with blackish. The center of the throat and upper breast and belly are whitish. The iris is grayish-brown, feet pale greenish, upper mandible blackish with narrowly yellow blades and tip, lower mandible yellow.

The above behavioral notes added to the fact that a series of these birds has now been collected including juvenals, clearly establishes *montanus* as a species of *Erithacus* (*Sheppardia auct*) and as conspecific with *lowei* Praed and Grant. Both forms have poorly concealed robin-like streaks of lighter color, palest buff to orange-buff from the nares to the superocular area. Both forms have pale, whitish lores. Above, these birds are dark brownish-olive, somewhat rufous-brown on wings and tail, especially in *montanus*. Below, *montanus* is grayish-white on throat and center of the belly, grayish-brown on breast and sides. *Lowe*i is suffused, buffy-white on throat and belly, orange-buff on breast and sides. Otherwise, except that *lowei* is smaller than *montanus*, there is no difference

between them, and as the two forms are allopatric they should be considered members of a single species.

Erithacus montanus lowei (Praed and Grant).

MATERIAL. Uzungwa Plateau, 30 miles SSE of Iringa, 2100 m alt (new record)—6 ♂ ad, one in breeding condition, 1 ♀ ad; *weight*: 6 ♂ 16.5-21.2 (19.3) g, ♀ 17.5 g; *wing*: 6 ♂ 69-73 (70.8) mm, ♀ 64 mm. Livingstone Mts., 30 miles south of Njombe, 2450 m alt (new record)—1 ♂ ad, 3 ♀ ad (gonads of most adults moderately enlarged), 1 ♂ juv; *weight*: ♂ ad 18.5 g, 3 ♀ 17-20 (18.3) g, ♂ juv 20 g; *wing*: ♂ ad 74 mm, 3 ♀ 66.5-67 (66.7) mm, ♂ juv 71 mm.

According to Praed and Grant (1955, vol. 2, p. 314) the range of this subspecies is the Njombe area of Iringa Province, only.

The ecology and behavior of this form is exactly as in *E. m. montanus* Reichenow. The song is unknown.

The juvenal plumage is until now unrecorded. It is identical with the juvenal plumage of *E. m. montanus* (Reichenow), but below not only the chest, but also the breast and upper belly are strongly mottled with blackish. White on the belly is restricted to its end. White on throat is slightly tawny tinted. The bill is black, with only the tip and cutting edges very narrowly yellowish.

This form replaces *E. m. montanus* (Reichenow) in the Dabaga and Mdando high mountain forests.

Erithacus sharpei sharpei (Shelley).

MATERIAL. Southern Tanzania: Mt. Rungwe, 2600 m alt—5 ♂ ad in breeding condition, 2 ♀ ad, one in breeding condition, 27 Oct.-3 Nov. 1962; *weight*: 5 ♂ 13-14.5 (13.7) g, 2 ♀ 12.5, 13 g; *wing*: 5 ♂ 62-66 (64.5) mm, 2 ♀ 60, 62 mm. Southern Tanzania: Uzungwa Plateau, Itanga, 30 miles SSE of Iringa (new record)—2 ♂ ad, one in breeding condition, 13-17 Sept. 1962; *weight*: both 15 g; *wing*: 68, 70 mm.

Ripley (in Peters 1964, vol. 10, p. 35) gives the range of this subspecies as southwest and northern Nyasaland; also eastern Tanzania, Uluguru Mts.

The iris of these birds is grayish-brown; the feet, extremely

pale flesh, sometimes with slight lilac or grayish tinge. The two specimens from Uzungwa Plateau are distinctly heavier and larger than the population from Mt. Rungwe and seemingly intermediate between subspecies *sharpei* (Shelley) and *usambarae* (Macdonald) (see below).

These birds inhabit thickets of low bushes covering the ground of high mountain cloud-forests near to their fringes. Hidden and elusive, they keep close to the ground but are rarely seen on it, except when feeding on driver ants.

The song was never heard. The warning call is a striking, sharp, rattling sound, which can be circumscribed imperfectly as "terrrr."

Erithacus sharpei usambarae (Macdonald).

MATERIAL. Northern Tanzania, East Usambara Mts., near Amani, 1100-1200 m alt—2 ♂ ad, 1 ♀ ad, 1 ♀ subad, 2 ♂ juv, April 1962; *weight*: 2 ♂ ad 12.5, 15 g, 2 ♀ 13, 15 g, 2 ♂ juv 15-15.5 g; *wing*: 2 ♂ ad 67, 69 mm, 2 ♀ 62, 63 mm, 2 ♂ juv 66, 68 mm.

The range of this subspecies is northern Tanzania: Eastern Usambara Mts. and Nuguru Mts.

According to the original description, (Macdonald, 1940) this subspecies can be distinguished from *sharpei* (Shelley) in "having the white area extended to the breast, not limited to the abdomen, and in this white being purer in color. . . ." The comparison of our series from the type locality and from southern Tanzania, which are both prepared in exactly the same way, does not confirm the existence of a tangible difference in extent of white between the two. But the white is indeed on the average (not in each specimen) somewhat purer in the series from the type locality. Such a difference alone would perhaps scarcely justify the nomenclatorial separation of the two subspecies, if there were not in addition a slight but seemingly constant difference in the intensity of the russet tinge on sides of throat and on ear coverts.

Erithacus gunningi sokokensis (van Someren).

MATERIAL. Eastern Tanzania, Pugu Hills, 50 miles south of Dar es Salaam—4 ♂ ad, 3 ♀ ad (5 specimens from end of Oct. and Nov. in breeding condition) 22 Sept.-11 Nov. 1961; *wing*: 4 ♂ 67-72 (69.2) mm, 3 ♀ 63-72 (66.3) mm.

Ripley (in Peters 1964, vol. 10. p. 35) gives the range of this subspecies as "Coastal areas of Kenya and Tanganyika, from Malindi to the Pugu Hills."

These birds live under the cover and in the shade of dense masses of bushes, overgrown by lianas in tropical, secondary lowland jungle. They were often seen on the ground or darting away closely above the ground, to perch motionless for some time on low hanging liana-loops or dry twigs.

Cossypha anomala albigularis (Reichenow).

MATERIAL. Eastern Tanzania, Uluguru Mts. at Morogoro, 1500-1700 m alt—4 ♂ ad in breeding condition, 1 ♀ ad with ready egg, 1 ♂ juv, Nov. and Dec. 1961; *weight*: 2 ♂ ad 26-28 g, ♂ juv 28 g; *wing*: 4 ♂ ad 73-76 (74.5) mm, ♀ 70 mm, ♂ juv 78 mm.

The range of this subspecies is restricted in this paper to eastern Tanzania, in the Uluguru Mts. only.

Comparison of four series (five to seven adult specimens each) from four different mountain cloud-forests of Tanzania (Uluguru Mts., Uzungwa Plateau, Livingstone Mts. and Mt. Rungwe) reveals that the Uluguru population can be easily distinguished from the three others by the color of the sides of the neck. In the populations from all localities in southern Tanzania, a distinct, deep black band runs from lores and sides of chin along the border of the white ventral side of the neck all the way down almost to the breast. However, in all specimens from the type locality, the black is restricted to the sides of the chin and to the anterior part of the malar region, being replaced further on by gray. Hence the use of the subspecific name *albigularis* (Reichenow) has been applied here only to the population of the Uluguru Mts. while all the southern populations have been attributed to other subspecies.

In the juvenal plumage, the dorsal side of head, lores, nape and mantle are olive-gray, mottled with tawny, with fringes of feathers blackish infuscated. The ventral side of head is tawny, the fringes of feathers blackish, the belly whitish. The tail is brighter russet than in adults. The median pair of rectrices are black; the next pair of rectrices are russet with fringes of inner and outer webs distally extensively black; all other rectrices have only outer web distally narrowly black.

These birds are very shy and elusive inhabitants of the densest

low thickets in the ravines of high mountain cloud-forests where they dwell permanently on or near the ground. The breeding season coincides with the beginning of the rainy season, as indicated by the condition of the gonads of all specimens collected during November and December.

Cossypha anomala njombe (Benson).

MATERIAL. Southern Tanzania, Uzungwa Plateau, 30 miles SSE of Iringa, 2100 m alt—5 ♂ ad, 1 ♀ ad (gonads of some specimens slightly enlarged), Sept. 1962; weight: 5 ♂ 22-25.5 (24.1) g, ♀ 26.5 g; wing: 5 ♂ 70-77 (73.1) mm, ♀ 72 mm. Southern Tanzania, Livingstone Mts., 30 miles south of Njombe, Mdando Forest, 2450 m alt—5 ♂ ad, 2 ♀ ad, all nearly in breeding condition, Oct. 1962; weight: 5 ♂ 26-27 (26.9) g, 2 ♀ ad 22.5, 25 g; wing: 5 ♂ 77-80 (79) mm, 2 ♀ 72, 73 mm.

This form differs distinctly from *albigularis* (Reichenow) in the extended and deep black color on the sides of the neck, as described in detail above under the latter subspecies. In this character it agrees with the population from Mt. Rungwe. It is distinguished from the latter as described by Benson by the much brighter cinnamon upper and under tail coverts and by the predominantly cinnamon color of the four outer pairs of rectrices. The darker color shade on back and rump seems to be a less tangible difference. The population from the Uzungwa Plateau (about 300 km NNW of the type locality) agrees exactly with topotypes.

The habitat of the subspecies corresponds generally with that described for *albigularis*. On the Uzungwa Plateau it was found to be more common in small relict patches of dense tropical jungle in the vicinity of the continuous forest than in the latter.

At the type locality all birds collected during October were approaching breeding condition, and males were diligently singing.

The song is rather soft and of a slightly melancholic timbre, composed of three or four tones only, the second of which is strongly accentuated, somewhat drawling, slightly tremulous and about four tones higher than the others: "túo - t j r r í o - t u." The singing male stays hidden in the low tangle, changing from time to time its perching place. The alarm note is a hoarse "t j r á . . . t j r á."

Cossypha anomala macclounii (Shelley)

MATERIAL. Southwestern Tanzania, Mt. Rungwe, 2600 m alt—4 ♂ ad, 3 ♀ ad, all in breeding condition (one female with ready egg), Nov. 1962; *weight*: 4 ♂ 23-26.5 (24.7) g, 2 ♀ 24, 26.5 g; *wing*: 4 ♂ 74-76 (74.5) mm, 3 ♀ 68-70 (69.3) mm.

The range of this subspecies is from northern Nyasaland (Vipya and Nyika Plateau) to southwestern Tanzania at the northern end of Lake Nyasa (Mt. Rungwe and Poroto Range). The population from the Rungwe Massif (of which the Poroto Range is a part) was compared with three specimens from northern Nyasaland and also with our two series of the subspecies *njombe* Benson. The color of the tail and tail coverts was found to be much less distinctly cinnamon than in *njombe* and almost, though not quite as dull as in the Nyasaland birds. The difference from the latter in the color of tail and back is so imperceptible that a subspecific separation seems undesirable.

Sylvietta whytii jacksoni Sharpe.

MATERIAL. Northeastern Tanzania, Mt. Meru, 1200 m alt, near Engare Nanyuki—2 ♀ ad, 22 July 1962; *weight*: 10.4, 11.2 g; *wing*: 59 mm. Northern Tanzania, Lake Manyara (western side) at the escarpment, 1200 m alt—1 ♀, 5 Aug. 1962; *weight*: 11 g; *wing*: 58 mm.

Praed and Grant (1955, vol. 2, p. 426) give the range of this subspecies as "Southern and eastern Uganda, to Kenya . . . and Tanganyika . . ., but not coastal areas nor the north-western area."

The specimens listed above differ strikingly in color from the populations from northeastern, central and southern Tanzania, treated in this paper, by the much richer tawny coloration of the entire ventral side. In size they agree with the pale birds from southern Tanzania (Iringa and Chimala), which are tentatively listed as *loringi* Mearns.

Sylvietta whytii lorongi Mearns.

MATERIAL. Northeastern Tanzania, Same, 1000 m alt—4 ♂ ad, 1 ♀ ad, May 1962; *weight*: 4 ♂ 10.5-11 (10.7) g, ♀ 9.5 g; *wing*: 4 ♂ 56-60 (58.5) mm, ♀ 54 mm.

The range of this subspecies, according to Mearns (1911), is "Kenya, Fort Hall and Taveta."

The area west of Same, where the specimens listed above were collected, is situated in the rain-shadow of the Paré Mountains and represents the most arid part of northern Tanzania. The vegetation of this country is poor and scattered, composed of thorny bushes and dwarfed trees. The bird fauna contains a number of species and forms, which are at home in arid regions farther north and have entered Tanzania only at this place.

This subspecies (based on the type and on the material from Same) is intermediate in size between the pygmy form *minima* Grant of the coastal belt, and the subspecies *jacksoni* Sharpe from western Kenya and northern Tanzania. It shares the pale color of upper and lower parts with *minima* and differs in this regard strongly from *jacksoni*. Farther south, in central and southern Tanzania (Iringa-Mbeya), populations have been found which agree in size with *jacksoni* but are almost as pale in color as *loringi*. One specimen from the southern end of the Livingstone Mts. even agrees with *loringi* in size as well as in color. It seems that a satisfactory subspecific arrangement of this species in Tanzania can only be based on one character, either on color or on size, as the use of a combination of both characters would lead to excessive splintering. If size could be used as a distinctive character, the central and southern populations could perhaps be associated with *jacksoni*. If color is regarded as decisive, then the diagnosis of this subspecies would have to be adjusted accordingly and we would have one pale subspecies of varying size, but always larger than *minima*, extending from Taveta in Kenya to the Livingstone Mts. in Tanzania, through the entire middle of the country. We are inclined to favor the latter alternative and have tentatively listed below all the pale populations under the name *loringi*.

MATERIAL TENTATIVELY INCLUDED. Southern Tanzania, Iringa, 1700 m alt—1 ♂ ad, gonads moderately enlarged, 1 ♀ ad, 30 Sept. 1962; *weight*: ♂ 12.5 g, ♀ 11 g; *wing*: ♂ 63 mm, ♀ 58 mm. Southern Tanzania, between Chimala and Mbeya, 1400 m alt—2 ♂ ad, 2 ♀ ad, 3-15 Jan. 1963; *wing*: 2 ♂ 59, 63 mm, 2 ♀ 59 mm. Southern Tanzania, 35 miles south of Njombe, Lugarawa, 2000 m alt—1 ♀ ad, eggs laid; *weight*: 11 g; *wing*: 55 mm.

Artisornis metopias (Reichenow).

Praed and Grant (1955, vol. 2, p. 420) give the range of this species as Tanzania from the Usambara Mts. to the Uluguru Mts., Nguru Hills, Luwiri-Kitessi Forest, Songea district and Unangu, Portuguese East Africa.

This is a bird of the low and dense ground-vegetation of the humid mountain forests, to be found at altitudes from about 1600 m alt up to 2500 m alt. It is not quite so elusive and adept at concealment as *Sathrocercus*, though it rarely appears higher than one meter above the ground.

The breeding season lies between October and February. Three nests have been found, one on 1 Dec. 1961 in the Uluguru Mts., containing one egg. The second egg was laid 3 Dec. Another nest, found in the Usambara Mts. by Bernd Heinrich, 21 Feb. 1962, contained two half-grown young birds; the third nest, found but two days later, contained two fresh eggs. The eggs, so far undescribed, are fairly large as compared to the size of the bird, oval, scarcely narrowed toward one end. The color is white, with dark red-brown marks spread over the entire surface, and with some pale grayish marks in between. All three nests were only about $\frac{1}{2}$ meter above the ground and sewn between the jagged leaves of the same species of a low plant.

The material collected by the Heinrich expedition suggests that the Tanzania populations of this species should be divided into three subspecies as follows:

Artisornis metopias metopias (Reichenow).

MATERIAL. Northern Tanzania, West Usambara Mts., near Lushoto and near Shume, 1700-2100 m alt—5 ♂ ad, 1 ♀ ad, 3 ♀ juv (gonads of specimens from Feb. moderately enlarged; specimens from March not in breeding condition), Feb. and March 1962; *weight*: 5 ♂ 8.5-9.5 (9) g, ♀ ad 9 g, 2 ♀ juv 8-8.5 g; *wing*: 5 ♂ 47-50 (48) mm, ♀ ad 44 mm, 2 ♀ juv 45 mm.

Western Usambara Mts. is the range of this subspecies. The population of Nguru Mts. should probably be included in this subspecies.

Artisornis metopias altus (Friedmann).

MATERIAL. Northern Tanzania, Uluguru Mts., near Morogoro, 1000-1800 m alt—2 ♂ ad, 3 ♀ ad, all in breeding condition, 22-30 Nov. 1961; weight: 1 ♂ 9.5 g, 1 ♀ 9.5 g; wing: 2 ♂ 46, 49 mm, 3 ♀ 43-46 (44.3) mm.

The range of this subspecies is the Uluguru Mts. only.

This form differs in both sexes from *metopias metopias* (Reichenow) by chestnut coloration on sides of throat and neck being more intensive and extending farther onto the throat, making the white longitudinal median band on throat narrower than in *metopias metopias* and somewhat less bright. Upper breast and side of body is rather strongly gray tinged, as in *metopias metopias*.

The name of this form has been synonymized by Praed and Grant (1955, vol. 2, p. 518) with *metopias metopias* (Reichenow). The series of specimens recorded above from the Uluguru Mts., type locality of *Opifex altus* Friedmann, shows enough differentiation from *metopias* to maintain Friedmann's name with subspecific status.

Artisornis metopias pallidus new subspecies.

TYPE. ♀ ad (YPM no. 48277), Collector's no. 35171, collected by Gerd Heinrich, 15 Sept. 1962, Tanzania, Itanga (ca. 30 miles SSE of Iringa) at 2100 m alt.

DESCRIPTION. Differs from *Artisornis metopias metopias* and from *metopias altus* by the almost entirely white chest and belly and also by restriction of the gray on the sides of the body. Chestnut on sides of throat and neck less extended than in *metopias altus* and thus agreeing with *A. metopias metopias*. Weight: Type, ♀ 9 g. Wing: Type, ♀ 46 mm, ♂ from Mdando Forest 47 mm.

MATERIAL. 1 ♂ ad in breeding condition from Mdando Forest, about 30 miles south of Njombe (southwestern end of Livingstone Mts.) seems to belong to this subspecies, the extent of gray on chest and sides of the body is intermediate between population from type locality of *metopias metopias* (Reichenow) and holotype of this subspecies.

Scepomycter winifredae (Moreau).

MATERIAL. Uluguru Mts., Morogoro district, 1600 m alt—2 ♂ ad, gonads slightly enlarged, 30 Nov. and 1 Dec. 1961; wing: 55, 56 mm.

The range of this species is eastern Tanzania, the Uluguru Mts. only.

The iris is light brown; the feet, dark gray; the bill, entirely black or lower mandible horn with only apical half laterally black.

APALIS THORACICA (Shaw and Nodder)

Motacilla thoracica Shaw and Nodder, 1811, Nat. Misc., 22, p. 969—Cape Province, Oliphants River.

The bar-chested warblers are confined in Tanzania to the high mountains in altitudes between 1600 and 2600 m a.s. Excepting on Mt. Meru from where they are not as yet recorded, every isolated mountain range of sufficient altitude seems to harbor the bar-chested *Apalis*. Their populations vary geographically to an amazing degree and in certain limits also individually. The principal variants are the color of the mantle and the color of the underparts between the black chest-bar, and the under tail coverts, the under parts varying from entirely yellow to entirely white, the mantle between ash-gray and moss-green. Otherwise, particularly in their general chromatic pattern, in size, voice, ecology and behavior, the different populations are very much alike. In contrast to most other *Apalis* species they are not tree-crown dwellers, but almost ground-birds, living in the very lowest plant thickets. In no place were two distinguishable forms of bar-chested warblers found side by side on the same mountain range. Summing up it seems to be beyond doubt that all the different populations found on the isolated mountain ranges of Tanzania should be considered as variants of one and the same species, and that consequently Praed and Grant's conception of the group (1955, vol. 2, p. 396) as two distinct species (green and gray backed) is indeed untenable. We are following here Praed and Grant's new interpretation (1963, vol. 2, p. 234) to join the Tanzania forms of bar-chested warblers with the South African forms as subspecies of *thoracica*.

The pattern of geographical variation of this species in Tan-

zania shows no indication of the usual cline, or even of a correlation between the degree of similarity of the different subspecies and their geographical proximity. On the contrary, forms with green back and extensively yellow ventral side alternate with gray-backed forms with white underparts almost in a checker-board pattern. This is obviously the reason for the former assumption of two distinct species. But the individual variants with more or less olive-green tinted mantles, found fairly commonly among some gray-backed populations, strongly contradict such a hypothesis.

Oberholser (1905) described *Apalis thescela* from Mr. Kilimanjaro, about 1,800 meters. Praed and Grant (1955) have ignored this form, not even mentioning it as a synonym. The type of *thescela* is a bar-chested warbler, rather different from the subspecies *griseiceps* Reichenow and Neumann, described in 1895 also from M. Kilimanjaro. The mantle is darker, more gray than olive-green, and the belly is less extensively and less strongly yellow tinged. Since the individual variability is rather large in this species, the only known specimen of *thescela*, the type, could well be just a mutant color phase of *griseiceps*. But the fact remains that it was collected more than 900 meters lower on the mountain than *griseiceps*, which occurs around 2700 meters. We have here tentatively assumed that *thescela* is a mutant of *griseiceps* and consequently considered the two names as synonyms.

Key to the subspecies of *Apalis thoracica*

(Shaw and Nodder) in Tanzania

1. Yellow on under parts reaches from under tail coverts right to the black chest-bar; two outer pairs of rectrices only tipped with whitish or pale gray (mantle olive-green) *uluguru* Neumann
Uluguru Mts. only
- A more or less extensive belt of white between the black chest-bar and the yellow on chest and/or belly; two outer pairs of rectrices more extensively and purer white 2
2. Mantle olive-green 3
- Mantle lighter or darker gray, in some specimens with a slight olive wash 4

3. Mantle light olive-green, nearly moss-green; white behind black chest-bar more restricted than in alternative subspecies, the yellow extending usually close to the black bar *iringae* new subspecies
Uzungwa Plateau
- Mantle darker, olive-green; white behind black chest-bar more extensive and running more gradually into the abdominal yellow *griseiceps* Reichenow
and Neumann
Mt. Kilimanjaro
4. Ventral side without yellow (ventral side except black chest-bar and slightly olive-gray tinged lower flanks entirely white; mantle clearly and fairly light gray, without any olive tinge) *youngi* Kinnear
Ufipa Plateau
- Apex of ventral side more or less extensively yellow 5
5. Slight buff tinge on throat; forehead to nape and sides of head ash-colored; mantle paler slate-gray than in alternative subspecies *whitei* Grant and Praed
Nyasaland, Dedza district.
According to Grant and Praed, also: southern Tanzania, southwest of Songea.
- Throat white, without buff tinge; forehead to nape and sides of head ash-brown to dusky-brown; mantle darker than in alternative subspecies, often partially olive tinged 6
6. Ventral side nearly entirely white, the yellow being restricted to the end of lower flanks and the very end of belly *parensis* new subspecies
Pare Mts.

- Yellow on belly and flanks much more extensive, usually covering half of the former, or more

murina Reichenow

In southern Tanzania: Mt. Rungwe, Mt. Mbeya, Livingstone Mts., and in northern Tanzania West Usumbara Mts.

Apalis thoracica parensis new subspecies.

TYPE. ♂ ad (YPM no. 84281), Collector's no. 34022, collected by Gerd Heinrich, northeastern Tanzania, Paré Mts., Chome, 1900 m alt, 1 June 1962.

DESCRIPTION. Belongs to the group of forms with gray mantle and predominantly white ventral side, thus strongly contrasting with northern neighbor race, *griseiceps* Reichenow and Neumann (Kilimanjaro). More similar to the southern neighbor *murina* Reichenow (West Usambara Mts.), from which *parensis* differs by strong restriction (nearly obsolescence) of the yellow on underside to the very end of the belly and the end of lower flanks. Similar also by the almost entirely white ventral side to *youngi* Kinnear (Ufipa Plateau). Differs from *youngi* by having a little yellow on the apex of belly and flanks and in addition by darker mantle and olive tinged rump. *Weight*: 2 ♂ ad 12.5, 13 g. *Wing*: 2 ♂ ad 52, 54 mm.

MATERIAL. 2 ♂ ad, gonads slightly enlarged; northeastern Tanzania, Paré Mts., Chome, 1900 m alt, 30 May and 1 June 1962.

Apalis thoracica murina Reichenow, 1904.

MATERIAL. Northeastern Tanzania, Western Usambara mts., near Lushoto and near Shume, 1700-2100 m alt—6 ♂ ad, 3 ♀ ad, all in breeding condition, 20 Feb.-10 March 1962; *weight*: 6 ♂ 10-12 (10.8) g, 3 ♀ 10.5-11.5 (11) g; *wing*: 6 ♂ 50-54 (51.8) mm, 3 ♀ 48-50 (49) mm. Southwestern Tanzania, Livingstone Mts., Mdando Forest, 30 miles south of Njombe, 2450 m alt—4 ♂ ad, 5 ♀ ad, all in breeding condition, 25 Sept.-15 Oct. 1962; *weight*: 4 ♂ 10.5-12.5 (11.5) g, 5 ♀ 10-13 (11.1) g; *wing*: 4 ♂ 51-53 (52.2) mm, 5 ♀ 49-52 (50.2) mm. Southwestern Tanzania,

Tukuyu district, Mt. Rungwe, 2600 m alt—3 ♂ ad, 6 ♀ ad, all in breeding condition, 27 Oct.-6 Nov. 1962; *weight*: 3 ♂ 11-12 (11.7) g, 6 ♀ 10.5-14 (11.8) g; *wing*: 3 ♂ ad 49-51 (50.3) mm, 6 ♀ 49-52 (50.5) mm. Southwestern Tanzania, Mt. Mbeya, near Mbeya, 2300 m alt—1 ♀, 27 Dec. 1962; *wing*: 49 mm.

The range in Tanzania of this subspecies is the Usambara Mts., Livingstone Mts., Mt. Mbeya, Mt. Rungwe. The range thus does not include the Uluguru Mts. and the Uzungwa Plateau near Iringa, where other subspecies occur. Also the population of the Paré Mts. is excluded.

From the three olive-green backed subspecies occurring in Tanzania (*griseiceps* Reichenow and Neumann from Mt. Kilimanjaro; *uluguru* Neumann from Uluguru Mts. and *iringae* new subspecies from Uzungwa Plateau), this subspecies is distinguished by two characters: the gray mantle and the more restricted yellow color on the abdomen. As specimens with slightly olive-green tinged mantle occur fairly often, the restriction of the yellow is a most valuable additional character for identification. In the population from the Pare Mts. (*parensis* new subspecies) the yellow is still more restricted, to the very apex of the abdomen and flanks, and in the population of the Iringa Plateau (*youngi* Kinnear) it is entirely absent.

Ecologically all populations of this subspecies were found to behave exactly as described for *uluguru* Neumann; they inhabit the densest ground vegetation on clearings along the edges of mountain forests.

In the Usambara Mts. on 23 Feb. a family was observed with young birds, which evidently had just left the nest. In the Livingstone Mts. 12 Oct. a nest was found containing 3 eggs which were white with red spots. The nest was domed, with lateral entrance near the top. It was woven from grass and into the grass, between some low bushes at the side of an elephant path, about $\frac{1}{3}$ meter above the ground.

The song is monotonous, repeating the same syllable 2-4 times in moderately fast sequence, with short intermissions after each sequence: "tjil tjil - tjil tjil tjil - tjil tjil tjil - etc." The alarm call is rather loud and sharp, almost metallic, uttering the same syllable in rapid sequence without intermission a number of times "tik tik tik tik tik." This warning call was heard only once in abundance,

when Heinrich had shot a mungo (*Mungos mungo*) crossing his path. The mungo (mongoose) disappeared in the tangle of low ground vegetation. Within seconds a number of *Apalis thoracica murina* appeared, uttering continuously the call described and hopping in great excitement around a certain spot, almost on the ground. When the plants were cut at the place indicated by the warblers, the dying mungo was found.

Apalis thoracica uluguru Neumann.

MATERIAL. Type locality, 1500-1600 m alt—5 ♂ ad, 4 ♀ ad, all in breeding condition, 22 Nov.-7 Dec. 1961; weight: 2 ♂ 11.5 g, 1 ♀ 12.5 g; wing: 5 ♂ 48-51 (49.4) mm, 4 ♀ 48-49 (48.7) mm.

The range of this subspecies is the Uluguru Mts. only. The birds inhabit dense ground vegetation, particularly on clearings in the midst of montane forests, or the fern thickets contiguous to their outer edges. They were always met in pairs, hunting for food most of the time close to the ground and well under cover of the rank tangle of low plants. They are not very shy and ascend occasionally into bushes up to 6 m above the ground.

The usual call sounds like "tjitjtjitji." It is somewhat similar to *Sathrocercus*, but more rapid in sequence, slightly higher and softer.

Apalis thoracica iringae new subspecies.

TYPE. ♂ ad (YPM no. 84282) Collector's no. 35226, collected by Gerd Heinrich, southern Tanzania, Uzungwa Plateau, 30 miles SSE of Iringa, Itanga, 2100 m alt, 18 Sept. 1962.

DESCRIPTION. Belongs to the group of forms with clearly olive-green mantle and extensively yellow colored ventral side, thus strikingly differing from all populations occurring farther south in Tanzania. Similar in color only to *uluguru* Neumann, the next neighbor to the north, and also to *griseiceps* Reichenow and Neumann from Mt. Kilimanjaro, but quite different from the populations between Uluguru Mts. and Kilimanjaro (Usambara and Paré Mts.). Differs clearly from *uluguru* by constantly having a white belt between the black chest-bar and the yellow on lower chest and abdomen, by the two pairs of outer rectrices being clearly and more extensively white and by the cap being darker. More similar

to *griseiceps*, differing from the latter by brighter olive-green, nearly moss-green, mantle and by the yellow on ventral side being more extensive, reaching closer to the black chest-bar. The cap is in females on the average lighter gray than in males. *Weight*: 7 ♂ ad 10-12 (10.8) g, 4 ♀ ad 10-11.5 (10.7) g. *Wing*: 7 ♂ ad 50-53 (51) mm, 4 ♀ ad 46-52 (48.7) mm.

MATERIAL. 7 ♂ ad, 4 ♀ ad, 1 specimen unsexed (gonads of most specimens slightly enlarged): southern Tanzania, Uzungwa Plateau, 30 miles SSE of Iringa, near Itanga, 2100 m alt, 13-19 Sept. 1962.

Apalis thoracica youngi Kinnear.

MATERIAL. Southwestern Tanzania, Ufipa Plateau, 12 miles NE of Sumbawanga, Mbisi Forest, 2500 m alt—5 ♂ ad, 2 ♀ ad, all in breeding condition, 25-29 Nov. 1962; *weight*: 5 ♂ 12-13.5 (12.8) g, 2 ♀ 12.5 g; *wing*: 5 ♂ 53-57 (55.4) mm, 2 ♀ 51, 52 mm.

Praed and Grant (1963, vol. 2, p. 237) give "Ufipa Plateau, south-western Tanganyika to Nyasaland" as the range of this subspecies. (Nyika and Vipya plateaux.)

In the Ufipa population above, the ventral side between chest-bar and under tail coverts is white, lacking all yellow color; the lower flanks are a very slightly olive tinged gray. The mantle is clearly gray, without any olive tinge, and in comparison with our broad series from Tukuyu district (type locality of *murina* Reichenow), distinctly lighter. In addition the Ufipa birds are larger.

Praed and Grant (1955, vol. 2, p. 397) have attributed the Ufipa population to the subspecies *youngi*, described from Nyasaland, distinguishing that race from *murina* by its darker ("slate color") dorsal side. Our Ufipa birds are, in comparison to a large series from the Tukuyu district, dorsally not darker but on the contrary, lighter. This fact raises some doubt whether the Ufipa population is indeed *youngi*, as we have assigned it.

Calamonastes stierlingi stierlingi Reichenow.

MATERIAL. Eastern Tanzania, near Morogoro, 600 m alt—4 ♂ ad, 2 ♀ ad (gonads of all moderately enlarged), end of Jan. and beginning of Feb. 1961; *weight*: 4 ♂ 12-14 (13) g, 2 ♀ 10.5, 13 g; *wing*: 4 ♂ 60-63 (61) mm, 2 ♀ 55, 56 mm.

Praed and Grant (1955, vol. 2, p. 393) give the range of this species as "East-central to south-western Tanganyika . . . and Portuguese East Africa."

The typical habitat is the dry brachystegia woods with sparsely distributed trees and partially grassy, partially bare ground.

The description of the song as given by Praed and Grant, 1955, is not correct. The song is composed of a trill of three syllables with accentuated first syllable, which is repeated with short intervals monotonously for a long time. By its monotony it strongly reminds one of the call of a tinker bird (*Pogoniulus*). It can be approximately circumscribed as "dididi dididi dididi dididi. . ." in endless sequence. There is nothing "flute-like" in the timbre of this song, which sounds rather unmelodic. The singing male is always perched in the crown of a tall tree, sometimes even on the top of a dead one.

Calamonastes simplex undosus (Reichenow).

MATERIAL. Southern Tanzania, Iringa, 1500-1700 m alt—1 ♂ ad, 1 ♀ ad, 1 ♀ juv, one specimen unsexed, 23 Aug.-10 Sept. 1962; southern Tanzania, 40-50 miles ENE and east of Mbeya, 1400 m alt—2 ♂ ad in breeding condition, Jan. 1963; Northern Rhodesia, Abercorn—1 ♂ ad in breeding condition; *weight*: 1 ♂ 12.5 g, 1 ♀ ad and 1 ♀ juv 12 g; *wing*: 4 ♂ 61-66 (63.3) mm, 1 ♀ ad 57 mm, 1 ♀ juv 56 mm.

Praed and Grant (1955, vol. 2, p. 394) give the range of these specimens as "South-western Kenya . . . and Tanganyika . . . from southern end of Lake Victoria to Tabora, Uluguru, Iringa and the Ufipa Plateau." (And northeastern Northern Rhodesia.)

The habitat of this form agrees with *stierlingi* Reichenow: open woodland of brachystegia type, with partially bare ground but seemingly restricted to higher altitudes than *stierlingi*. These birds seem to dwell much on the ground where they were observed several times walking around for long periods of time in search of food.

The singing male is perched well hidden and almost invisible in the foliage of the crown of a tall tree. It is very shy and will, at the approach of an observer, at once stop singing and shortly thereafter either fly away to continue its song in another, far remote tree crown, or, more often, dive straight down to the

ground, taking cover in some dense low bushes or other ground vegetation.

The song consists of only one sound of metallic timbre which is repeated endlessly and monotonously in fairly slow sequence. It is rather loud compared with the small size of the bird and reminds one strongly of the calling of a tinkler bird.

Macrosphenus kretschmeri kretschmeri (Reichenow and Neumann).

MATERIAL. Northeastern Tanzania, East Usumbara Mts., near Amani, 600-1200 m alt—1 ♂ ad in breeding condition, 2 ♀ ad in breeding condition, one with almost ready egg, 1 ♀ juv, 2-12 April 1962; *weight*: ♂ 21 g, 2 ♀ ad 18, 21 g, ♀ juv 18 g; *wing*: ♂ 65 mm, 2 ♀ ad 60, 61 mm, ♀ juv 58 mm. Pugu Hills, near Dar es Salaam—4 ♂ ad, 2 ♀ ad (one ♀ lowlands, 15 miles west of Dar es Salaam), 17 Sept.-18 Oct. 1961; *wing*: 4 ♂ 63-65 (64) mm, 2 ♀ 61, 62 mm.

Praed and Grant (1955, vol. 2, p. 134) give the range of this subspecies as "Eastern Tanganyika . . . from Mt. Kilimanjaro and the Usumbara Mts. to the Uluguru Mts. and the Pugu Hills."

The iris of this bird is white or yellowish white and the feet, lilac or lilac-pink.

A bird of the damp, tropical lowland jungle, it is found wherever heavy growth of lianas occurs among the bushes and trees of lower and median height. Tangles of lianas form the true habitat of this species. It inhabits the lower and median floor of the liana wood, but is usually not found in the ground- thickets. It searches the tangle of vines surrounding a tree trunk or other clusters of hanging vegetation in the same characteristic way as *concolor* Hartlaub or *flavicans* Cassin in West Africa, gliding skillfully and in a lively manner, but without hurry, through a maze of twigs and lianas, and often climbing effortlessly up a hanging liana stem.

Neumann (1920) has based the description of his genus *Suaheliornis* on this species, separating it generically from *Macrosphenus* only by the longer tail (in relation to the length of the wing). In all other ways including plumage, bill, ecology and behavior these forms are similar. The sole difference in the relative length of the tail hardly merits generic distinction.

Macronyx ameliae wintoni Sharpe.

MATERIAL. Northern Tanzania, eastern and northeastern foot of Mt. Meru, 1500-1600 m alt—3 ♂ ad, 3 ♀ ad, 5-23 July 1962; weight: 3 ♂ 33.4-34 (33.7) g, 3 ♀ 31.5-34 (33.2) g; wing: 3 ♂ 91-93 (92) mm, 3 ♀ 86-89 (87) mm. Northern Tanzania, western shore of Lake Manyara, 1200 m alt—1 ♂ ad, 3 Aug. 1962; weight: 31 g; wing: 90 mm.

The range of this species is western Kenya and northern Tanzania. (The limits of the range need further investigation.) It inhabits treeless grasslands on the highland downs at altitudes from about 1000-1600 meters, seemingly preferring the vicinity of natron-containing lakes (Lake Manyara, Maerker Lakes, NE of Mt. Meru).

Praed and Grant describe the male of this form as having "a broad black collar across chest and running upwards to gape. . ." None of the 4 adult males recorded above has such a collar. Instead they show a chest band of fairly narrow black streaks, similar to the females, from which they differ only by the salmon or salmon-tinged throat and by the more extensive and richer salmon belly. According to the examination of the fresh skull all 4 specimens have been identified as adults (although none of them was in breeding condition.)

Neither Praed and Grant (1955, vol. 2, p. 80) (1955) nor Mayr and Greenway (Peters, 1960, vol. 9, p. 144) nor Traylor, (1963) have divided *ameliae* De Tarragon (described from Natal) subspecifically. The birds from northern Tanzania differ rather strikingly from specimens from South Africa in their much paler, salmon-pink, color of throat and belly, much shorter bills and basally more extensively black outer rectrices. The subspecific name *wintoni* Sharpe is therefore applied to the East-African population.

Macronyx fulleborni fulleborni Reichenow.

MATERIAL. Southern Tanzania, Uzungwa Plateau, Itanga, 30 miles SSE of Iringa, 2000-2100 m alt—2 ♂ ad, 4 ♀ ad, Sept. 1962. Southwestern Tanzania, Rungwe Mts., 2600 m alt—1 ♂ ad in breeding condition, Nov. 1962. Southwestern Tanganyika, near Mbeya, 2300 m alt—1 ♂ ad, 1 ♀ ad, both in breeding condition.

Weight: 3 ♂ 54-57 g, 4 ♀ 46-55 g; *wing*: 3 ♂ 96-102 mm, 5 ♀ 87-98 (93) mm.

Reters (1960, vol. 9, p. 143) gives the range of this subspecies as "The interior of Tanganyika from Mbulu to Njombe and the country north of Lake Nyasa."

This bird is an inhabitant of the treeless undulating parts of the Southern Highlands of Tanzania in altitudes around 2000 meters where it keeps to the marshy meadows of river valleys or other marshy deepenings. The call has, in contrast to *croceus* (Viellot) and *aurantigula* Reichenow an unmelodic, slightly hoarse ring; it is one-syllabic and sounds like "t j á." Flushed specimens usually utter a three-syllabic twitter, several times repeated in rapid sequence, like: "t j í t j e l i p. . . t j í t j e l i p. . . t j í t j e l i p." The breeding season coincides with the beginning of the big rains. According to the state of the gonads of the specimens listed above it lies between November and January.

The subspecies occupies the Southern Highlands of Tanzania. We have recorded it from the district of Iringa southwestward to the mountains north of Lake Nyasa and to Mbeya where it closely approaches the range of the following subspecies.

Macronyx fulleborni ascensi Salvadori.

MATERIAL. Southwestern Tanzania, Ufipa Plateau, 12 miles NE of Sumbawanga, 2500 m alt—1 ♂ ad, 1 ♀ ad, both in breeding condition; *weight*: ♂ 60 g, ♀ 52 g; *wing*: ♂ 100 mm, ♀ 95 mm.

The range of this subspecies is the eastern Congo, northeastern Angola, southwestern Tanzania and the Ufipa Plateau. The pair collected on the Ufipa Plateau agrees completely with a series of this subspecies from the Kasai River in northeastern Angola.

Lanius excubitoroides bohmi (Reichenow).

MATERIAL. Southern Tanzania, near Chimala, 58 miles east of Mbeya—2 ♂ ad, 2 ♀ ad, 2 ♀ juv, 7-12 Jan. 1963; *wing*: 2 ♂ 120, 124 mm, 2 ♀ ad 120 mm, 2 ♀ juv 119, 120 mm.

Praed and Grant (1955, vol. 2, p. 592) give the range of this subspecies as "Abyssinia to western Kenya . . . and western Tanganyika. . ."

These specimens were found in open, semi-cultivated lowland country with scattered bushes and a few trees, in flocks of two or three families. The gonads were somewhat enlarged (probably past breeding).

Ploceus olivaceiceps nicolli Sclater.

MATERIAL. West Usambara Mts. (near Lushoto, near Manolo, and near Shume), 1700-2100 m alt—3 ♂ ad, 2 ♀ ad, 1 ♂ juv, 3 ♀ juv, 23 Feb.-19 March 1962; *weight*: 3 ♂ ad 31-33 (31.8) g, ♂ juv 31 g, 2 ♀ ad 28-32.5 g, 3 ♀ juv 27-30.5 (28.8) g; *wing*: 3 ♂ ad 83-90 (87) mm, ♂ juv 88 mm, 2 ♀ ad 83 mm, 3 ♀ juv 83-85 (84) mm. Uluguru Mts., 1600 m alt, near Morogoro—1 ♀ ad, 10 Dec. 1961; *weight*: 28 g.

The range of this subspecies is only in northeastern Tanzania, East and West Usambara Mts. (New record: eastern Tanzania, Uluguru Mts.)

In the adult male not only is the forehead dull yellow, as described in Praed and Grant, but also the entire crown and nape. The head color of the adult female varies from dusky-brown, as described by Praed and Grant, to black. In the only female from Uluguru Mts., the head is entirely black as it is also in one adult female from West Usambara Mts.

In the juvenal plumage, so far unrecorded, the chest is faintly chestnut tinted and only slightly darker than the breast and belly in contrast to the adult. The rest of the head as well as the entire upper side is uniformly black.

Ploceus bicolor kersteni (Finsch and Hartlaub).

MATERIAL. Northeastern Tanzania, Western Usambara Mts., near Lushoto, 1150-1700 m alt—2 ♂ ad (one in breeding condition), Feb. 1962; *weight*: 1 ♂ 36.5 g; *wing*: 2 ♂ 91, 89 mm. Southern Tanzania, Uzungwa Plateau, about 30 miles SSE of Iringa—2 ♀ ad, Sept. 1962; *weight*: 31.5, 33 g; *wing*: 80 mm.

The range of this subspecies is Somalia (extreme south); Tanzania (island); Kenya coastal belt; eastern Tanzania on coast south to Rufiji River and inland to Usambara, Kilosa, Mahenge and Njombe.

Ploceus bicolor kigomaensis (Praed and Grant).

MATERIAL. Southwestern Tanzania, Ufipa Plateau, 2400 m alt—1 ♂ ad, 1 ♀ ad, 1 juv, sex?, Nov. 1962; *weight*: ♂ 39 g, ♀ 35 g; *wing*: ♂ 90 mm, ♀ 84 mm. (New record: 12 miles NE of Sumbawanga at 2500 m alt.)

Peters (1962, vol. 15, p. 54) gives the range of this subspecies as "Congo region, south of about lat. 5°S.; Northern Rhodesia, east of about long. 24°E. and north of about lat. 12°S.; extreme western Tanganyika. . ."

This subspecies comes rather close to *amaurocephalus* (Cabanis). Although it was compared in the original description with *amaurocephalus*, the difference between the sexes in the color of chin and throat was not considered. In fact the color of the throat plumage of the female of *kigomaensis* is almost identical with the male of *amaurocephalus*. But if the sexes are compared separately it is possible to separate the two subspecies, particularly the female.

Feathers of chin and throat are black and in the female more or less sparsely tipped with yellow toward the chest, as they are in the male of *amaurocephalus*. In the females of the latter subspecies, the feathers of chin and throat are in contrast to *kigomaensis* dark gray and on the throat usually apically yellowish tinged. In addition the mantle of *kigomaensis* is slightly darker than in *amaurocephalus* and the black on the nape seems to be slightly more extended and to run more gradually into the gray of the mantle.

Pseudonigrita arnaudi arnaudi (Bonaparte).

MATERIAL. Northern Tanzania, northeastern foot of Mt. Meru near Engare-Nanyuki, 1600 m alt—2 ♂ ad, 1 ♀ ad, 3 ♀ juv, July 1962; *weight*: 2 ♂ 22, 24 g, ♀ ad, 3 ♀ juv 20.5-25 g; *wing*: 2 ♂ 64, 68 mm, ♀ ad, 3 ♀ juv 64-68 mm (average of all 6 specimens 66 mm).

Peters (1962, vol. 15, p. 7) gives the range of this species as "Southwestern Sudan, Uganda, Kenya, extreme northern Tanganyika, between Lake Natron and Kilimanjaro."

Within the area of investigation (NE of Mt. Meru) this bird was found to be ecologically confined to extended stands of widely

scattered "flute -acacias" (*Acacia seyal* Del. = flute acacia or whistling tree) on very poor, almost barren ground. The species was not seen in any other habitat. Several nesting colonies have been observed. Although the birds were not in breeding condition at the time of observation, they visited the nests occasionally. A colony comprised several neighbouring trees of the strange pygmy acacia, which as a rule is not higher than 4-6 meters. Each tree within a colony bore about 2-5 nests.

The measurements of the series from the foot of Mt. Meru agree with the measurements given by Friedmann, 1937, for the subspecies *kapitensis*.

Pseudonigrita arnaudi iringae new subspecies.

TYPE. ♂ ad (YPM no. 48278), Collector's no. 35025, collected by Gerd Heinrich, 1 Sept. 1962, southern Tanzania, 15 miles NE of Iringa.

DESCRIPTION. Differs from *arnaudi arnaudi* Bonaparte and from *arnaudi australo-abyssinicus* Benson rather strikingly by considerably smaller size (lesser weight and shorter wing) and also in the color of the cap and mantle, which is much darker, ash-gray, and has on the mantle a distinctly scaly appearance, the fringes of the feathers being infuscated. In small size as well as in the color and scaly appearance of the mantle, *iringae* agrees with *dorsalis* Reichenow from the northwestern and central part of Tanzania from which it differs by the predominantly black tail with only the apical quarters or less of the rectrices being grayish-buff. *Weight*: 2 ♂ ad 16, 16.5 g, 3 ♀ ad 16-18 g, 1 ♂ juv 17 g (average of all 7 specimens including the one with unidentified sex 16.6 g). *Wing*: 2 ♂ ad 59.5, 61.5 mm, 3 ♀ ad 61.5 mm, 1 ♂ juv 61.5 mm (average of all specimens 61 mm).

MATERIAL. 2 ♂ ad, 3 ♀ ad, 1 ♀ ? ad, 1 ♂ juv, none in breeding condition, all from type locality.

ECOLOGICAL NOTE. The habitat of this bird is distinctly, though not very strongly, different from the one described above for *arnaudi arnaudi*. In contrast to the latter form, *arnaudi iringae* inhabits a more humid area with heavier soil and denser grass, a "park landscape" with scattered, large acacia trees and bush

complexes, forming the fringe of a large, treeless flat. The flute acacia, so characteristic for *arnaudi arnaudi*, does not occur in the habitat of *arnaudi iringae*.

Serinus dorsostratus maculicollis Sharpe.

MATERIAL. Northeastern Tanzania, Same, 1000 m alt (new record)—1 ♂ ad, 3 ♀ ad, 1 ♂ juv, 1 ♀ juv, 6-20 May 1962; *weight*: ♂ ad 16 g, 3 ♀ ad 13.5-16 (14.8) g, ♂ juv 14.5 g, ♀ juv 15 g; *wing*: ♂ ad 73 mm, 3 ♂ ad 69 mm, ♂ juv 70 mm, ♀ juv 70 mm. Northeastern Tanzania, foot of Mt. Meru, near Engare-Nanyuki, 1600 m alt (new record)—1 ♂ ad; *weight*: 16 g; *wing*: 75 mm.

Praed and Grant (1955, vol. 2, p. 1064) give the range of this bird as "Southern Abyssinia, British Somaliland, south-eastern Sudan to Uganda and northern Kenya . . . as far south as Lake Baringo and the Northern Guaso Nyiro."

This bird is confined in northern Tanzania to the most arid areas with scattered bushes, dwarfed trees and poor stands of grasses or bare ground.

Serinus atrogularis hilgerti Zedlitz.

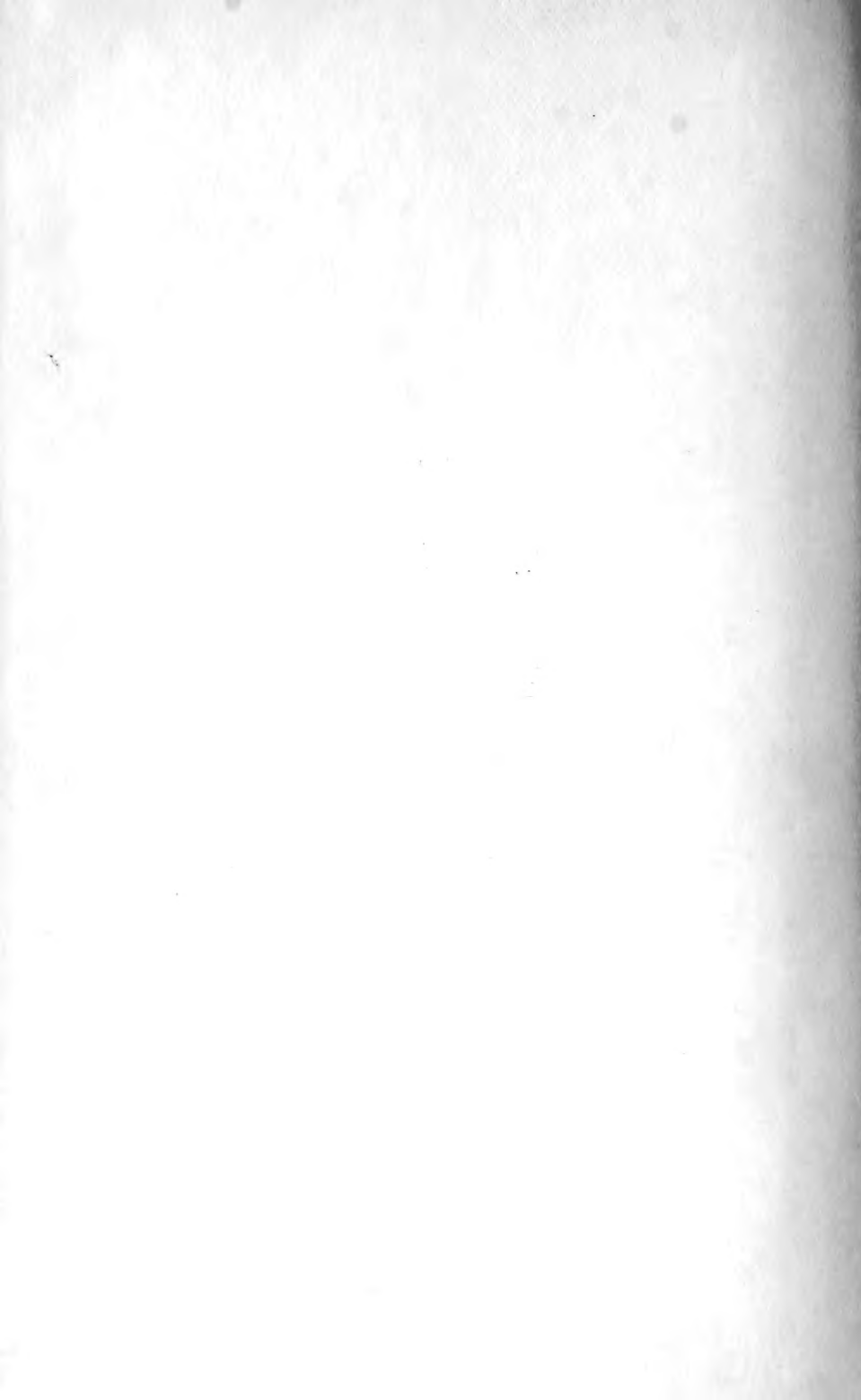
MATERIAL. Eastern Tanzania, 6 miles ESE and 10 miles NW of Dar es Salaam (new record)—1 ♂ ad in breeding condition, 2 ♀ ad, one in breeding condition; *wing*: 1 ♂ 62 mm, 2 ♀ 61 mm.

Praed and Grant (1955, vol. 2, p. 1076) give the range of this subspecies as southern Italian Somaliland and eastern Kenya south to Mombasa.

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